



**Annual Return of Statistics relating  
to Forest Administration in British  
India for the year 1928-29**

(With which is incorporated  
the Quinquennial Review,  
ending 31st March 1929)



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3. Diagram showing annual forest revenue, expenditure and surplus for the 10 years 1919-20 to 1928-29.



## QUINQUENNIAL REVIEW.

### Constitution of the Forests.

The following review of Forest Administration in British India during the five years ending the 31st March 1929 is published for general information.

*Forest Area.*—At the close of the quinquennial period under review the forest areas in British India, including the Shan States, amounted to 249,822 square miles, of which 106,849 square miles are reserved, 6,308 square miles protected, and 136,665 square miles unclassed State forests, the whole representing 22·7 per cent. of the total area of British India (with the Shan States) or taking into account only reserved and protected forests, 10·2 per cent.

2. *Forest Surveys.*—The area surveyed by the Survey of India amounted to 7,198 square miles, and 750 sheets were published. The cost debited to the Forest Department on account of mapping and publishing and the cost of special surveys, etc., amounted to Rs. 11,47,660 as compared with a sum of Rs. 11 lakhs during the previous period.

### Organisation.

3. *Administration and control.*—The appointment of Inspector General of Forests was held by Sir Peter Clutterbuck until the end of March 1926, when he proceeded on leave preparatory to retirement. On the 1st of April Mr. (now Sir Alexander) Rodger assumed charge of the double post of Inspector General of Forests and President, Forest Research Institute and College, and held this post until the end of the period under report except for 8 months in 1927 when he was on leave and Mr. H. S. Tireman, Chief Conservator of Forests, Madras, officiated. This arrangement was sanctioned by the Secretary of State in October 1926.

During the period now being reported on, the Inspector General of Forests visited Burma, Assam, Bengal, Madras, Coorg, the Central Provinces, Bombay, Punjab, Hazara, Bihar and Orissa, the United Provinces, the North-West Frontier Province, the Andamans, and Kashmir. An important step was taken by the Inspector General of Forests in March 1927 when at the request of the Chief Commissioner he visited a number of forests in the North-West Frontier Province and made proposals for the establishment of a proper Forest Department which would take charge of all the forests of which the Government of India could get control west of the Indus. Owing to financial stringency these proposals were not accepted until April 1930, but in that month an officer was appointed to hold charge of Conservator of the new circle. It is anticipated that these measures will lead to a great advance in forest conservation not only in the North-West Frontier Province itself but in tribal areas such as Chitral, Swat and Kohistan.

During the whole of the period under review "forests" were a transferred subject in the provinces of Burma and Bombay.

The peculiar circumstances of Burma have led to very little, if any, deterioration in the management of the very large and valuable forest estate which exists in Burma. A new service has been organised and the Government of Burma have made their own rules for recruitment and payment of the forest staff.

A further consequence of the "transfer" was separation of the administration of the forests in the Federated Shan States from that of the forests in the rest of Burma. In the Federated Shan States the Commissioner replaces the Chief Conservator of Forests as head of the Department; but the gazetted staff continues on the same cadre with that of Burma and the services of the Working Plans Circle are used for the control of forest management.

### Recruitment and training.

4. (a) *Indian Forest Service*.—As a result of the recommendations of the Lee Commission it was decided that recruitment in future should be on the following basis—

75 per cent. Indians and 25 per cent. Europeans

On the 1st November 1926 the new Indian Forest Service College at Dehra Dun was opened and the following students were trained and allotted to provinces and States between that date and July 1930. (This includes students still under training).

Year.	No. of students trained.	Allotted to
1926-28	. 2 (Government) . . . . . 1 do. . . . . 2 . . . . . 6 (Private). 1 (Extra Assistant Conservator from Assam).	Madras. Punjab. Tehri State.
	<hr/> 12	
1927-29	. 3 (Government). . . . . 2 . . . . . 1 (Private)	Central Provinces, Madras and Assam. Mandi & Kashmir State.
	<hr/> 0	
1928-30	. 4 (Government) 1	Baroda State.
	<hr/> 5	

The future of the Indian Forest Service College at Dehra Dun is a matter of considerable uncertainty. As a result of the transfer of forests in two provinces, Bombay and Burma, the number of students who have been annually recruited for training at Dehra Dun has been very small. In certain provinces, for example in the Punjab and the United Provinces, the gazetted forest staff has been larger than the local Governments had any need for and this has led to a considerable reduction in the number of recruits who have been trained at Dehra Dun up to date. It was hoped that students would be sent for training at Dehra Dun from other parts of the Empire, such as the Malay States, South Africa, Kenya and Uganda, but up to date there has been no response to the letters sent to these parts of the Empire regarding the opportunities for scientific training available at Dehra Dun. Although the course is expensive it has not been found possible to run the College at a profit owing to the very small number of students who have been sent up for training. During the 5 years under review the following numbers of Europeans have been recruited by the Secretary of State for India and have been sent to India to the provinces named—

Province.	No. of recruits.
Madras . . . . .	4
Burma . . . . .	15
Central Provinces . . . . .	3
Total . . . . .	<hr/> 22

A feature of the five-year-period under review is the number of Indian students who have gone to the Universities in England and Scotland for training at their own expense with a view to obtaining appointment in the Indian Forest Service on return to India. It has been found possible to give appointments to very few of these officers, and it is to be hoped that Indian students will avoid this method of trying to get into the Indian Forest Service in the future as it is practically certain to lead to disappointment.

The first examination for the Indian Forest Service was held in Allahabad in August 1926 by the Inspector General of Forests and the examinations of 1927 and 1928 were held at Delhi by the Public Service Commission. The number of recruits appointed at these competitive examinations was as follows—

1926 . . . . .	2
1927 . . . . .	3
1928 . . . . .	4

The total number of officers in the Indian Forest Service in March 1929 was as follows—

(1) Europeans . . . . .	230
(2) Indians . . . . .	90
(3) Burmese . . . . .	3

(b) *Provincial Forest Service.*—On the 31st March 1928, the last Provincial Forest Service students left Dehra Dun and since then the College has consisted of two branches namely the I. F. S. College and the old established Rangers College. Each province is now making its own arrangements for recruiting Provincial Forest Service officers.

(c) *Training of Rangers.*—During the five-year-period the Rangers College at Dehra Dun has continued to train rangers not only for the provinces of Upper India but for Kashmir and other Indian States. The number of students who obtained certificates were as follows :—

1925 . . . . .	16
1926 . . . . .	20
1927 . . . . .	16
1928 . . . . .	17
1929 . . . . .	15

Ranger students for Madras, Bihar and Orissa, the Central Provinces and parts of Southern India were trained at the Forest College at Coimbatore.

5. *Forest Engineering Service.*—As noted in the Quinquennial Review published five years ago, the Secretary of State for India sanctioned the formation of a Forest Engineering Service in 1919. It was hoped at that time that this service would develop into a useful organization, but these hopes have been falsified. With few exceptions it was found that there was little or no work of the special nature for which these officers were trained in the various provinces to which they were posted, and the result has been that a number of them have been or are being transferred from the Forest Engineering Service to the Provincial Forest Departments. No recruitment for this service has taken place since the year 1922.

In addition to the regular Forest Engineering Service a number of temporary Forest Engineers mostly from the United States of America were employed on special duty, mainly in Madras, but it has been found that it has been impracticable to give these officers work on such a scale as to justify the heavy expense of paying their salaries, and their services have now for the most part been dispensed with.

### Conservation and Improvement.

6. *Fire protection.*—The area over which special fire protection was attempted shows a decrease of about one per cent. in 1928-29 as compared with the figure for 1923-24. It will be noted from the report for the last 5-year-period that considerable decrease took place in the area under fire protection. This decrease is still going on and the policy of most of the Forest Departments is to spend less money on fire protection as it has been found that in many parts fire protection does more damage to the forests of India than good. The percentage of forest protected during each of the five years under report was almost exactly 40 per cent. and the percentage of failure to area attempted has varied

during the same period from 1 per cent. in 1928-29 to 10 per cent. in 1924-25. The percentage of burnt areas must of course vary with the season as in very hot dry seasons, for example in the United Provinces in 1929, the areas burnt show a very considerable increase.

7. *Grazing.*—During the year 1928-29 over 14,170,000 animals were provided with grazing in State forests of all classes and out of this number no less than 4,880,000 grazed free. The figures for 1923-24 were 13,300,000 (4,860,000 free) and for 1918-19 were 13,300,000 (5,300,000 grazed free). Except in Burma the damage done to the forests by excessive grazing is one of the most important problems with which the Forest Department has to deal. This matter was brought very particularly to the notice of the Royal Commission on Agriculture and it was proposed that the officers of the Forest Department should endeavour to deal in a more scientific manner with the grazing problem. Forest officers will probably be sent to certain Agricultural Colleges and other institutions where they may learn something of the different varieties of grass which provide useful fodder for animals. Undoubtedly, however, little progress will be made in India until it is realised that grazing should be scientifically utilised. Forest areas should be opened in rotation and more use should be made of cut fodder as, at present, the cattle trample more grass than they eat. In parts of India the public have shown little conception of the damage that is done to their own grazing grounds, both in and outside the forests, by the excessive number of useless cattle that are kept, and little progress can be looked for in this respect until the villagers learn to keep a few good cattle instead of very many useless animals.

8. *Afforestation.*—Good progress has been made in the important work of afforesting denuded ravine lands in the United Provinces. During the quinquennium the area of plantations increased from 10,000 acres to more than 16,000 acres. In the Punjab 1,171 acres had been reclaimed up to the end of 1928-29. A forest officer was put on special duty in the Punjab to deal with the problem of denudation of some of the hilly dry tracts and it is hoped that the great progress which has been made, for example in the Pabbi hills, will be extended to other parts of the Punjab, where excessive grazing has resulted in very serious damage not only to the growth on the ground but to cultivated areas lower down where floods from the barren hills destroy the villagers' fields.

The following extract is taken from the Review of Forest Administration in the United Provinces for the quinquennium :—

"But the change of policy has been relatively more important than mere territorial expansion. Previously the main object was the afforestation (with tree growth) of waste ravine lands in Agra, Etawah and Jalaun districts for commercial and protective purposes. It became obvious, however, that such tracts are not only the most difficult in the province to afforest (in some cases it is probably impossible), but that mostly they offer little or no prospect of a financial return. Therefore during the last 2 years there has been a notable increase of experimental and demonstration work in the chief types of waste lands that occur in the province (ravine land, *bhr*, *usar*, *khola*), including plantations along canals. Probably the most important feature is the interest shown by Zamindars and big land-owners in our demonstration areas, quite a number of whom have already started similar operations for improving their waste and uncultured lands at their own expense. It is evident that Government can never treat anything but a very small fraction of the waste lands in the Province which are estimated to cover 25,000 square miles, but if the Zamindars themselves become interested in the work, the possibilities of afforestation and improvement are greatly increased. This interest, shown by Zamindars, has resulted in an increased demand for advice and assistance, which necessitates increased staff in the Afforestation Division, and proposals for expansion are at present before Government. During the last two or three years, and especially as a result of the recent fodder famine, the importance of increasing fodder supplies in the plains districts has been more clearly recognised. The demonstration that mere protection from grazing will give hay crops on barren *usar* plains is a feature of the quinquennium that is already producing

practical results, and a number of *usar* areas have been and are being taken up for hay production. Similarly, the increased production of hay cheaply and easily on *bhur* and other waste lands by scattering the seed of good fodder grasses (combined with protection) is a proved fact that will have valuable economic results.

Summarizing the development of the Afforestation division work during the past quinquennium there is a decided tendency to develop more on the lines of the Agricultural Department (*i.e.*, experiment, demonstration and advice) rather than the usual commercial forestry of the Forest Department."

9. *Plantations*.—Expenditure on plantations continues to increase, the following being the figures for the last 5 years—

1924-25 . . . . .	6 lakhs.
1925-26 . . . . .	7 "
1926-27 . . . . .	8 "
1927-28 . . . . .	8 "
1928-29 . . . . .	9 "

The area brought under regeneration shows a steady and gratifying increase, and it is evident that a very important point is being realised in most provinces, and that is, that it is impossible to make very large areas of good plantations in any forest during any one year. During the tours of the Inspector General of Forests in various parts of India it was noticed over and over again that when endeavours were made to fell large areas of forests and to replace them with plantations it was almost certain that considerable areas would be failures. The population available for this work is limited and the subordinates who have to control it are often of an inferior description. Even in Burma where the local population take to plantation work very readily, it has been found to be a great mistake to endeavour to form large areas of plantations in any one year. It is being realised more and more that the success of new plantations depends principally on successful results in the first year, and there can be no greater crime in technical forest work than to cut a forest down without having taken proper measures to see that it can be replaced by a new forest. Scientific silviculture and plantations have received much more attention in the Andamans during the period than ever before.

10. *Communications and buildings*.—Expenditure on communications and buildings continues to increase, the figure in 1924-25 being 30 lakhs and that for 1928-29, 37 lakhs. Penetration into the more remote and isolated forests of India is steadily going on, and the extraction and utilisation of many valuable timbers must depend on useful means of communication. Burma, having the largest area of forest naturally leads the way in expenditure on communications, the annual figure having risen at the end of the quinquennium to 10 lakhs: otherwise the larger provinces mostly spend 3 or 4 lakhs each on communications and buildings, and as a rule more is spent on new roads than on new buildings; but it is realised that one of the best methods of supervising forest work is to have good housing for the staff not only at headquarters but in the forests.

#### Exploitation and Commercial development.

11. *Outturn of forest produce*.—The average annual outturn of timber and fuel from all sources during the quinquennium under review was 347,800,000 cubic feet against an average of 340,000,000 cubic feet in the previous quinquennium. The amount of timber and fuel extracted from the reserved forests was less during the year 1928-29 than during any other period of the quinquennium, and this accounts to a considerable extent for the drop in the general figures for revenue. This figure may be accounted for by the general difficulties under which trade has been labouring for some time past. Minor products from the reserved forests, which include many products such as lac, on the other hand, kept their position, and the year 1928-29 shows almost as good figures as any other period of the quinquennium under review. Taking the total for timber and fuel from all sources the outturn was well maintained.

During the year 1928-29, 21,200,000 cubic feet were removed by Government and 146,000,000 by purchasers. These figures are of course very largely

affected by the Burma figures, as in that province very large quantities of teak are extracted by the more important lessees.

The trade in bamboos continues to be almost stationary—their value being about 19 lakhs of rupees per annum. Bamboos are as a rule mostly extracted by villagers for their own use and for sale in the larger towns. It may be expected that the various schemes for the exploitation of bamboos for the manufacture of paper will lead to a very great development in the trade in this product.

Grazing and extraction of fodder grass has been also stationary for each of the years of the quinquennium under review. It may be noted that with the exception of the more remote forests in Burma, Assam, &c., the maximum amount of grass and other minor forest products have been extracted for a considerable number of years.

**12. Exploitation.**—The five years now under report have witnessed the initiation and development of certain large schemes, especially in Madras, which have had very indifferent success. It was hoped in Madras, by means of modern American methods, to extract and utilise very large quantities of valuable timbers, but the final result of this work was to prove that this extensive exploitation was not justified either by the stand of timber in the forests or by the possibilities of satisfying markets. The general result of the work during the 5-year-period has been, that the local Government have adopted a much more cautious and conservative policy, and are now content with making small but regular profits.

An important measure was sanctioned by the Government of India for the development of the forests of the Andamans. Hitherto we have been obliged to employ elephants to extract the logs to the creeks among the Islands, but they have never been satisfactory, mainly because the climate and fodder is unsuitable for them, and we have never been able to touch more than the fringes of the 2,500 square miles of the Andaman forests. It has now been decided to employ American methods in the North Andamans and American logging machinery has been purchased, and an American expert has been engaged, to take charge of the work. This work, if confined to forests which are obviously suitable, should be in the highest degree advantageous for the future trade in Andaman timbers. Elsewhere in India a great part of the trade in timber and forest products lies in the hands of small contractors, who are, on the whole, trustworthy if sufficient control is maintained over their operations. In Assam the manufacture of tea-boxes of plywood has made great strides, and has been much assisted by the favourable terms given to the manufacturers. In the United Provinces there has been a considerable increase in the direct supply of railway sleepers, and forest tramways have been successful. During the five years period, more than one million teak trees were girdled.

Mechanical tractors have not proved a financial success in Bombay, but the seven saw mills in that province have paid their way, and at Allapilli in the Central Provinces the saw mill has paid for itself twice over during the five years.

#### Agencies for the sale of timber.

**13.** The only agents with which the Government of India dealt were Messrs. Martin & Company who still act as agents for the sale of Andaman timbers in Calcutta, and their London firm also takes part in the sale of Andaman timbers. The agency held by Messrs. W. W. Howard Brothers and Company for the sale of timber from the Andamans and other parts of India, in London, terminated in December 1926, but considerable difficulty has been experienced in winding up this agency and in obtaining a satisfactory settlement of accounts.

A Timber Adviser was appointed by the High Commissioner for India in 1927, and his business has been to deal with the trade in Andaman and other Indian timbers in the London market. It cannot be stated that this

trade has so far been brought to a satisfactory state, as the intense conservatism of the English timber trade, and the difficulty of obtaining a footing for little known timbers, have combined to make satisfactory sales very difficult. We may, however, expect that in the near future these conditions will become easier.

During the 5-year-period under report the following quantities of timber were disposed of from the Andamans—

	c. ft.
1924-25 . . . . .	1,183,820
1925-26 . . . . .	1,411,298
1926-27 . . . . .	1,610,187
1927-28 . . . . .	2,172,180
1928-29 . . . . .	2,469,410

The principal increase of exports took place to Calcutta.

### Forest Management.

14. *Working Plans.*—The percentage of the total forest area in British India which is now under working plans has attained its highest figure in the year 1928-29, having risen from 45 per cent. in 1924-25 to 55 per cent. in 1928-29. It is gratifying also to record that in the important forest State of Kashmir very great progress has been made in bringing valuable forests of the State under proper working plans. During the last year of the quinquennium the most important additions to the area of forests under working plans were Bengal, 1,000 square miles, Burma 3,000 sq. miles and Madras 3,000 sq. miles. The total area under working plans rose from 54,000 square miles at the beginning of the quinquennium to 73,000 square miles at the end of the period, and it may be noted that many of these working plans are constantly being revised. The technical efficiency of these working plans varies considerably in different provinces. In Burma there are already 19,000 square miles under efficient working plans, while in Assam working plans have hardly begun. This has been the subject of a special note by the Inspector General of Forests when touring in that province. A number of the provinces have their own special Conservators or Deputy Conservators in charge of Working Plans, and this is a measure which should be adopted for all the larger provinces.

15. *Panchayat and Forest Village Systems.*—In March 1929 the total area under Panchayat management in Madras was 3,400 square miles. The control of these forests is now vested in the Board of Revenue and no technically trained officers are concerned in their management. It is too early as yet to decide whether this management by Panchayat is likely to be a success. Forest villages have continued to increase in number and will increase with the development of plantation work. Here also a note of warning must be struck, as it has been found that, unless forest villages are very carefully controlled, a great deal of forest and money are liable to be wasted.

### Exhibitions.

16. The Forest Department was very well represented in the Indian and Burmese pavilions at the exhibition at Wembley in 1924. Messrs. W. W. Howard Brothers and Company, who were then Government agents for the sale of Indian timbers in England, were in charge of the exhibits, and deserve the utmost credit for the methods they employed to show Indian timbers to the best advantage. These exhibits were universally acknowledged to be the best timber exhibits in the whole of the exhibition at Wembley, and have resulted

in a greatly increased demand for many of the valuable and ornamental hard-woods of India, which have been employed on a considerable scale in the new India House at Aldwych.

### Financial results.

17. The following statement shows the growth of forest revenue and expenditure during the past 65 years—the figures in all cases being the annual averages of the quinquennial periods :—

Quinquennial period.	Gross revenue (Average per annum).	Expenditure (Average per annum).	Surplus (Average per annum).	Percentage of surplus to gross revenue.
	Lakhs.	Lakhs.	Lakhs.	
1864-65 to 1868-69	87·4	23·8	13·6	36·4
1869-70 to 1873-74	50·3	39·3	17·0	30·2
1874-75 to 1878-79	60·6	45·8	20·8	31·2
1879-80 to 1883-84	88·2	56·1	32·1	36·4
1884-85 to 1888-89	116·7	74·3	42·4	36·3
1889-90 to 1893-94	159·5	86·0	73·5	46·1
1894-95 to 1898-99	177·2	98·0	79·2	44·7
1899-00 to 1903-04	196·6	112·7	83·9	42·7
1904-05 to 1908-09	237·0	141·0	116·0	45·1
1909-10 to 1913-14	296·0	163·7	132·3	44·7
1914-15 to 1918-19	371·3	211·1	160·0	43·0
1919-20 to 1923-24	551·7	367·1	184·6	33·5
1924-25 to 1928-29	595·1	351·1	244·2	40·9

Most of the provinces show a steady increase of surplus, fortunately not too large in any case.

The slump in trade of the last few years is now evident in the surplus for the year 1928-29 which has fallen to 227 lakhs, having been 256 lakhs in 1927-28 and 264 lakhs in 1926-27. The figure, however, is still a most favourable one and indicates that the forests of India are being properly worked for the benefit of the country.

### Research.

18. *General.*—Under no heading is it possible to record greater progress than under the head of Forest Research during the 5 years now being reported on. In almost all provinces research has come into its own, and in all the major provinces special officers have been appointed for research in utilisation and silviculture. Special officers have also been appointed in some provinces to deal with research in botany and entomology. The general scope and organisation of the work of these research officers is based on the principles observed at the Forest Research Institute at Dehra Dun, where the Research Institute has developed on a very large scale during the 5-year-period now being reviewed. It was decided in 1920 that the old premises at Chandbagh were quite inadequate for the accommodation of the Research Institute, as now required for India, and 1,200 acres were acquired some two miles from Dehra Dun. On this site a very large building has been erected and the opening ceremony was

performed by His Excellency the Viceroy on November 7th 1929. In addition to the main building a large range of Economic workshops has been erected, and quarters for all the staff, from the President down to the lowest paid subordinates, have been supplied. The Institute is now in full swing, and is for the greater part fully occupied. During the year 1930 it is expected that the Bio-Chemist will occupy the new laboratories now being erected for his use and when his transfer takes place, the whole of the Research staff will be on the new site.

A list of the Publications of the Forest Research Institute during the five-year-period under review is given at the end of this report.

19. *Silviculture*.—The most striking development of silviculture during the 5-year-period has been the extension of plantation work. As a result of the appreciation of the fact that economic forestry must depend on the adoption, wherever possible, of some uniform method of management, modern working plans have prescribed in very many cases the formation of regeneration working circles. Intensive fellings have been carried out over certain confined areas, the idea being in most cases to replace the forest felled by means of plantations of various descriptions. The Burma system known as *toungya*, that is, a combination of agriculture with forestry, has been largely adopted in a number of the provinces of India. Nursery work has made very great strides. Plantations are now fenced, and seedlings are raised in very large quantities both in nurseries and on the original forest land. Along with this has gone the scientific development of thinnings, a most important point in connection with these young plantations.

In spite of all the investigations that have been carried out, the problem of the regeneration of sal in some of the valuable forests of the United Provinces has not yet been fully solved, and the scientific investigation of the regeneration of the splendid evergreen forests of Burma, Assam and the West Coast has only recently been started. These are two of the most important enquiries that are being carried out by the Forest Research Institute and the local Silviculturists, who are all working together for the solution of these problems.

A number of volume and yield tables have been published during the 5-year-period under review, and they will be of the utmost value to working plan officers and divisional officers.

In March 1929 a very large and representative number of forest officers attended the Silvicultural Conference at Dehra Dun, the most important Silvicultural Conference that has ever been held in India. The more important subjects dealt with at this Conference were as follows :—

1. The relations of Central and Provincial Silviculturists.
2. Revision of the Glossary of Technical Terms.
3. Standardisation of methods of experimental research.
4. Importance of the origin of seed in artificial regeneration.
5. Problem of the pure teak plantation.
6. Regeneration of evergreen forests.
7. Artificial regeneration with selection system in mixed forests.
8. Revision and compilation of Statistical Code.
9. Methods of research on thinnings.
10. Standardisation of methods of stock mapping and symbols.
11. Method of calculating sustained yield.
12. Rate of interest to be charged on afforestation and regeneration.

In no branch of forestry has such an awakening taken place among forest officers as in the development of silvicultural research. This subject has engrossed the attention of a large number of experts, and Forestry methods in the provinces have developed very greatly of recent years as a result of these enquiries.

*20. Forest Economy.*—As a result of Mr. R. S. Pearson's long and able administration of the Forest Economic Branch, the Government of India now has at Dehra Dun a series of forest workshops and experimental laboratories without parallel anywhere else in the world. The value of the experimental work done in this Branch at Dehra Dun is daily exemplified by the unending stream of enquiries which are received from persons doing business in timber and other forest products, not only in India but in many other parts of the world. The officers in charge of this Branch have been for the greater part trained in Europe, America and the Continent, and their technical efficiency is now of a very high order. The greater part of the expenditure on the Forest Research Institute is incurred in the Economic Branch, the budget of this Branch being about 5 lakhs, out of a total of 10½ lakhs, in the year 1928-29.

A considerable amount of utilisation work has also been carried out during the period in Burma, and work has also begun in Madras, the United Provinces and Bengal.

The following are the main heads under which forest utilisation has been studied at the Forest Research Institute :—

*Seasoning.*—The progress made in scientific seasoning of valuable hardwoods of India in the two types of kilns employed has been very great. Chart showing how the principal timbers should be seasoned have been prepared and the trained staff is available to assist enquiries in organising scientific seasoning. The most important advance made is in the railway workshops at Lillooah, where kilns have been established on the lines advocated at Dehra Dun. As a result of experimental work, seasoning kilns have also been established in the Government Gun Carriage Factory at Jubbulpore. These were under the charge of Mr. Fitzgerald who was for a long time at Dehra Dun, and after leaving Dehra Dun organised the work at Jubbulpore and was in charge of the kilns until his death in 1930. It is hoped to establish kilns in the Andamans for the scientific treatment of the hardwoods obtainable there, as the extremely trying climate of these Islands prevents, to a considerable extent, the export of timbers to Europe in good condition. Seasoning kilns have also been built in Madras and Burma, and the science of seasoning is gradually being understood elsewhere in India.

*Wood Preservation.*—For a considerable part of the period under report the Wood Preservation Section was unfortunately without an experienced officer in charge. The most important item of research in this section is the treatment of railway sleepers, and during the period under review very great progress was made in the experimental treatment of many hardwoods, to make them fit for use as sleepers in the Railways of India. One of the aims of this section is to prove to the Railways that Indian timbers, although they may be originally perishable and liable to attack by white ants, can be treated in such a way that they will compete on favourable terms with other timbers, which have been imported in considerable quantities from foreign countries, such as *Eucalyptus* from Australia. Research methods have met with much success, and wood preservation plants have been erected by the North Western Railway at Dhillian, where many thousands of sleepers are treated annually. This research is of the greatest importance to the Forest Department as it is necessary at the present moment to contend with the increasing use of steel railway sleepers by all important railways.

*Timber Testing.*—This is a large section of the Economic Branch and has done an immense amount of good work. Under the charge of Mr. Seaman it has developed very greatly, and has now produced results of the utmost value to all timber users in this country. During the last year of the period under report 41,000 mechanical tests were carried out and 39,000 physical determinations. The number of computations in the computing office was 41,000, and many letters and reports were issued. The following important subjects may be mentioned as having been under investigation during the 5-year-period :—

Parts of aeroplanes; plywood; timbers for railway carriage work; Picker arms in jute and cotton mills; timbers for piles under water; tea chests; timbers for rifle stocks; timbers for boat building.

The results of the experimental work in this section are tabulated in such a way that they can be easily used by all those interested in the strength of the timbers, and the results are always published immediately they are available.

*Paper Pulp.*—Mr. Raith, officer in charge of the Paper Pulp section, left the Institute in March 1929, and Mr. Bhargava, who had been on deputation to Europe and America, took over charge at that time. The paper and pulp plant has continued to operate successfully throughout the period under review. Many valuable investigations have been carried out, specially with regard to bamboos, one of the most important forest products of Assam, Burma, Madras and Bombay. Although the results at Dehra Dun have not yet led to any very striking commercial success in making pulp from bamboo and grass, it is expected that within a short time one or two large companies will be floated to undertake this work, probably in Burma. In the meantime, work on a small scale has been carried out in Madras and in Calcutta. Woods and grasses have also been the subject of investigation, and much valuable advice has been given on this subject.

*Wood Technology.*—Dr. Brown, an American who had been employed at the Forest Research Institute for 1½ years, left Dehra Dun in 1923. After that, no officer was appointed to the charge of this important section for some time, but in the year 1929 Mr. Chowdhury, who had been under training in America under Dr. Brown for two years, was appointed to the charge of the section. A knowledge of the structure and qualities of wood is of the utmost importance to all research officers who deal with utilisation, and this section has made considerable progress during the period. In 1925 Dr. Brown published a Manual of Indian Wood Technology, which, although termed "elementary" contained much more than any volume published on this subject before. Dr. Brown and Mr. Pearson are now engaged in the compilation of a very important work on the more important timbers of India. This will be published by the Clarendon Press and will contain full accounts of all the important timbers together with micro-photographs of wood structures.

*Minor Products.*—This section was more or less in abeyance for a considerable time, but a special officer of the Forest Department from Madras was appointed to the charge of the section in 1926. The organisation of the section has taken a considerable time, but useful work has been carried out, specially with regard to medicinal plants, charcoal, resins, briquetting, match manufacture, fibres and turpentine.

*Wood Workshops.*—During the 5-year-period the wood workshops in their new home have done an immense amount of most useful work. In addition to training Indian carpenters, most valuable investigations have been carried out in the use of Indian woods for plywood, and into the use of hard-woods for making furniture and other goods of many descriptions. The section to a considerable extent is supplementary to the other sections, such as Timber Testing, Seasoning and Wood Preservation. A great deal of original and valuable work has also been done by Mr. Nagle, the officer in charge of this section. Mr. Nagle is now devoting his energies principally to the enquiry into Indian woods for plywood. It is to be hoped that as a result of the recommendations of the Tariff Board an experimental match factory may be established at Dehra Dun, but this has not yet been found possible.

*21. Forest Botany.*—During the 5-year-period, Forest Botany has made great strides in Burma and at the Central Research Institute. Systematic Botany has taken the first place in the work and much help has been given to Forest Officers all over India in the identification of specimens. The Forest Botanist has continued to work on Duthie's Flora of the Gangetic Plains, and it is now approaching completion. Experiments have been made to test the effect of soil inoculation on the growth of plants. The gardens in charge of the Forest Botanist have been much improved, many rare and valuable plants have been grown, and a great deal of seed has been supplied to enquirers in various parts of the world.

The work done in Mycology has been most valuable. The newly appointed Mycologist has produced an authoritative record on *Peridermium*, which has

been published. In Burma the Forest Botanist has succeeded in greatly increasing our knowledge of the flora of that province.

The investigation of the spike disease in sandal has been carried on in Mysore, Madras and Coorg during the five years, but no definite results are available so far.

22. *Forest Entomology*.—Great progress was made under the head of Forest Entomology, not only at Dehra Dun, but also in Burma. The most important insects which have been under special investigation are—the teak bee-hole borer in Burma; the sal borer in the United Provinces and the Central Provinces; and the teak defoliator of Madras. Continuous and well organised research work has been carried out in connection with these insects. The laboratories and collections at the new Forest Research Institute are well equipped, and on a very large scale, and the staff is well trained and has completed a great deal of good work. Besides the three pests named above, many other minor insect plagues have been investigated. The Forest Entomologist and Systematic Entomologist are in correspondence with experts all over the world, and the Institute at Dehra Dun has acquired an international reputation.

23. *Chemistry*.—The work of the Forest Chemist is to a considerable extent auxiliary to the other branches at the Forest Research Institute. The investigations of various forest medicinal plants, of forest soils, of turpentine, of wood preservatives, may be mentioned as the main headings under which investigations have been carried on, but the Forest Chemist has continually to assist all the Branch officers in their many varied enquiries. It has been found necessary to increase the establishment recently.

#### Forestry Committee.

24. In February and March 1929 a Committee appointed by the Government of India investigated the work of the Forest Research Institute at Dehra Dun, and made recommendations regarding its future lines of work. The members of the Committee were Sir Chunilal Mehta, Chairman, Professor Lindemann of Oxford and Mr. Wroughton of the Bombay Burma Trading Corporation, Limited, Rangoon. The Committee made a most careful investigation into all the work at the Institute and their principal recommendations were as follows:—

- (1) The constitution of an Advisory Board with representatives from the Governors' provinces, the Railway Board, and Chambers of Commerce.
- (2) A recommendation that more control should be given to the President.
- (3) The appointment of a Director of Research who must be a first class scientist. He will be subordinate to the President, Forest Research Institute and College.
- (4) The appointment of a Personal Assistant to the Inspector-General of Forests and President, Forest Research Institute and College.
- (5) Centralisation of Branch offices.
- (6) Improvement of methods of recruitment of the sectional officers and subordinates.
- (7) The necessity for training officers abroad and for keeping in touch with other similar Institutions by means of visits. Stress was also laid on maintaining intimate touch with forest officers in provinces, with the Railways, etc.

#### Protection of the Fauna of the Country.

25. During the 5-year-period under review, public interest was considerably stimulated regarding the protection of the splendid fauna of British India

and Burma. The Society for the Protection of the Fauna of the Empire has had a considerable number of recruits in India, and measures have been taken where possible to protect the rarer animals which are in danger of extermination. In Burma, especially, progress has been made in this respect, a forest officer having been put on special duty as Game Warden to protect the animals. Useful sanctuaries have been made in Burma and elsewhere, where wild animals may be seen in their native haunts. During the 5-year-period 1,200 elephants were captured in Burma. The greatest difficulty encountered in protecting wild animals in India is the fact that guns which are nominally issued for the protection of crops are frequently used by poachers. Many of the finest game animals in India will certainly be exterminated if the issue of guns is not better controlled than at present.

A. RODGER,  
*Inspector-General of Forests to the  
Government of India.*

DEHRA DUN; }  
*The 12th July, 1930.* }



*List of Forest Publications issued by the Forest Research Institute, Dehra Dun,  
during the 5-year-period ending 31st March 1929.*

1.—BULLETINS (NEW SERIES.)

No.		Rs. A. P.
56.	A Report on the Tan Values of Indian Myrobalans and Burma <i>Terminalias</i> , by J. A. Pilgrim.	0 6 0
57.	Tan Investigation of the Burma Hill Pine, <i>Pinus Khasya</i> bark and <i>Pyinkado</i> , <i>Xylo-dolabriiformis</i> , by the same author.	0 3 0
58.	General Volume Tables for Chir ( <i>Pinus longifolia</i> ), by S. H. Howard . . .	0 8 0
59.	Summary of results of Treated and Untreated Experimental Sleepers laid in the Various Railway Systems of India, by J. H. Warr.	1 14 0
60.	Note on <i>Ailne</i> ( <i>Artocarpus hirsuta</i> , Lamk.), by C. C. Wilson . . .	0 7 0
61.	Eucalyptus in the Plains of North-West India, by R. N. Parker . . .	0 5 0
62.	Preliminary Yield Table for <i>Dalbergia Sissoo</i> , by S. H. Howard . . .	0 2 0
63.	Eucalyptus Trials in the Simla Hills, by R. N. Parker . . .	0 8 0
64.	Summary of results of Laboratory Experiments with different wood Preserving Antiseptics, by S. Kamesam.	1 12 0
65.	Tables for bark deductions from logs, by S. H. Howard . . .	0 3 0
66.	A Note on the Working Qualities of some Common Indian Timbers, by H. E. Kinns.	0 10 0
67.	Chir ( <i>Pinus longifolia</i> ) Seed Supply, by S. H. Howard . . .	0 3 0
68.	Notes on the Comparative Economic Cost of Wood and Metal Sleepers in India, and Cost of Treatment, by J. H. Warr and H. Trotter (withdrawn).	...
69.	The Mechanical and Physical Properties of Himalayan Spruce and Silver Fir, by L. N. Seaman, assisted by C. R. Ranganathan.	1 1 0
70.	Hoplocerambyx spinicornis—An Important Pest of Sal, by D. J. Atkinson	0 15 0

2.—RECORDS.

Vol. X,	Part VIII.—The Constituents of some Indian Essential Oils, Part XIII.—The Essential Oil from a New Species of <i>Andropogon</i> occurring in the Etawah District, by J. L. Simonsen.	0 3 0
" X,	IX.—Tannin investigation of some Burmese <i>Dipterocarps</i> , by J. A. Pilgrim.	0 7 0
" X,	X.—The Mangroves of South Tenasserim, by the same author.	0 15 0
" X,	XI.—Report on Burma Oak and Chestnut Tans; by the same author.	1 1 0
" XI,	I.—The Constituents of some Indian Essential Oils, Parts XIV-XV, by J. L. Simonsen.	0 3 0
" XI,	II.—Contributions towards a knowledge of Twisted Fibre in trees, by H. G. Champion.	2 8 0
" XI,	III.—Regeneration with the assistance of <i>Taungya</i> in Burma, by H. R. Blanford.	1 4 0
" XI,	IV.—On Some Indian Branthids, Parts I—III, by Richard Kleine, C. F. C. Beeson and J. C. M. Gardner.	1 5 0
" XI,	V.—The Constituents of some Indian Essential Oils, Part XVI, by M. Gopal Rau.	0 12 0
" XI,	VI.—The Constituents of some Indian Essential Oils, Part XVII, by M. Gopal Rau and J. L. Simonsen.	0 3 0
" XI,	VII.—Volume Tables for Teak ( <i>Tectona grandis</i> ) and Sal ( <i>Shorea robusta</i> ) for the Central Provinces, by V. K. Maitland.	0 9 0
" XI,	VIII.—The Economic Importance and Control of the Sal Heartwood Borer, by C. F. C. Beeson and N. C. Chatterjee.	1 4 0
" XI,	IX.—Summary of Investigations on Bamboos and Grasses for Paper Pulp, by W. Raith.	0 8 0
" XI,	X.—Notes on the Antiseptic Treatment of Assam Timbers for Railway Sleepers, by J. H. Warr assisted by S. Kamesam.	1 14 0
" XII,	I.—Volume and Outturn Tables for Sal, by S. H. Howard . . .	1 2 0
" XII,	II.—Identification of Immature Stages of Indian Cerambycidæ, I, <i>Cerambycini</i> , by J. C. M. Gardner.	0 8 0
" XII,	III.—Second Interim Report on Work under Project No. I, by L. N. Seaman.	1 12 0
" XII,	IV.—Yield Table for clear-felled Sal Coppice, by H. Howard.	0 8 0
" XII,	V.—Yield and Volume Tables for Chir, by the same author . . .	1 0 0
" XII,	VI.—Yield and Volume Tables for Deodar, by the same author.	0 8 0
" XII,	VII.—Descriptions of new species of Niponiidæ and Cerambycidæ from India, by J. C. M. Gardner.	0 6 0

2.—RECORDS—*contd.*

Rs. A. P.

Vol. XII,	Part VIII.—Note on some Indian Cloridae, Part I, by J. B. Corporal, and Part II, by C. F. C. Beeson.	0 5 0
„ XII, „	IX.—Notes on Artificial Regeneration in North India, by S. H. Howard.	1 6 0
„ XII, „	X.—On Some Indian Coleoptera, Part I, by E. Fleutiaux, and Part II, by J. C. M. Gardner.	0 4 0
„ XIII, „	I.—Illustrations of Indian Forest Plants—Part I, Five Species of <i>Dipterocarpus</i> , by R. N. Parker.	1 0 0
„ XIII, „	II.—Identification of Immature Stages of Indian Cerambycidæ, II; and Descriptions of Three Indian Beetle Larvæ (Carabidae, Col.) by J. C. M. Gardner.	1 4 0
„ XIII, „	III.—Commercial Volume Tables for Sal in the wet mixed forests of the Bengal Duars, by Parma Nand Suri.	0 6 0
„ XIII, „	IV.—Volume Tables for Sundri in the Sunderbans, Bengal, by the same author.	0 10 0
„ XIII, „	V.—Epidemic attacks by the Sal Heartwood Borer ( <i>Hoplocrambyx spinicornis</i> ) in the forests of South Mandla Division, C. P., by W. A. Muir.	2 10 0
„ XIII, „	VI.—On some Indian Coleoptera, Hemiptera and Thysanop- tera, Part I, by R. Kleino, Part II, by A. Thery, Part III, by O. C. Ollendorf; Part IV, by Carl J. Drake; and Part V, by Dudley Moulton.	1 6 0
„ XIII, „	VII.—Slash in Chir Pine ( <i>Pinus longifolia</i> ) Forests; Causes of Formation, its Influence and Treatment, by J. E. C. Turner.	3 6 0

## 3.—MANUALS.

Explanatory Notes on Forest Law (3rd Edition)	2 2 0
Manual of Forest Mensuration, Revised by C. E. Simmons	3 14 0
An Elementary Manual on Indian Wood Technology, by H. P. Brown	4 0 0

## 4.—LECTURE NOTES.

Special Lecture Notes on the Minor Forest Products of India for Indian Forest Students, by H. Trotter.	1 6 0
Special Lecture Notes on the Preservation of Timber for Indian Forest Students, by J. H. Warr.	1 6 0
Special Lecture Notes on Pulp and Paper Making for Indian Forest Students, by W. Raith.	0 8 0
Special Lecture Notes on Timber Strengths and Timber Testing for Indian Forest Students, by L. N. Seaman.	3 6 0
Special Lecture Notes on Timber Seasoning for Indian Forest Students, by S. Fitzgerald and S. N. Kapur.	1 6 0
Special Lecture Notes on Sawmill, Wood Workshop and Tool Room Management for Indian Forest Students, by W. Nagle.	0 12 0

## 5.—OTHER PUBLICATIONS.

Forest Research Institute and College Calendar, 1925	5 6 0
" " " " " 1928	6 14 0
Progress Report of Forest Research Work in India for 1923-24	2 8 0
" " " " " 1924-25	2 12 0
" " " " " 1925-26	2 14 0
" " " " " 1926-27	4 0 0
" " " " " 1927-28	4 12 0
Progress Report of the Imperial Forest College, Dehra Dun, for 1923-24	1 6 0
" " " " " 1924-25	1 8 0
" " " " " 1925-26	2 14 0
" " " " " 1926-27	1 12 0
" " " " " 1927-28	3 2 0
The Development of India's Forest Resources, compiled by the Economic Branch	2 12 0
Project No. II.—Tests of Indian Timbers in Structural Sizes, by L. N. Seaman	0 8 0
Project No. IV.—Mechanical Strength, Seasoning properties, Treatment of and Key to Certain Indian Sleepers Woods, by R. S. Pearson, L. N. Seaman, C. V. Sweet, J. H. Warr and H. P. Brown.	0 9 0
Project No. V.—Testing of Raw Materials (Paper Pulp Section), by W. Raith	0 5 0
Project No. VII.—Kiln Seasoning of Indian Timbers, by S. Fitzgerald and S. N. Kapur.	1 4 0
Key to Families of Flora Simlensis, compiled by R. Banerjee	1 0 0
A System of Filing Information on Forestry, by S. H. Howard	2 14 0
Forest Flora of the Chakrata, Dehra Dun and Saharanpur Forest Divisions, U. P., by Upendranath Kanjilal, Third edition, revised and enlarged by Basant Lai Gupta.	3 3 0
Elementary Silviculture in Urdu, by Muhammad Hakimuddin	1 8 0
Elementary Silviculture in Hindi, by the same author	3 0 0

## STATEMENT I.

Area of forests under the control of the Forest Department.

Province.		Forest area in square miles.				Percentage of forests to whole area of Province.	Remarks.
Name.	Area in square miles.	Reserved.	Protected.	Unclassed State.	Total.		
1	2	3	4	5	6	7	8
Bengal . . . .	76,755	(a) 6,462	(b) 628	8,145	10,535	13.7	(c) Includes 20 square miles of reserved forests not under the management of Forest Department. (d) Includes 11 square miles of other protected forests not under the control of Forest Department.
United Provinces . . .	106,720	(e) 5,150	4	38	5,201	4.8	(c) Includes 1 square mile of leased forests.
Punjab . . . .	97,231	(d) 1,532	(e) 8,210	(f) 500	5,341	5.5	(d) Includes 350 square miles of leased forests but excludes 500 square miles of reserved forests not under the control of the Forest Department. (e) Excludes 71 square miles not under the control of the Forest Department. (f) Excludes 235 square miles of forest and village forest lands. (g) Includes 6,613 square miles without forest growth.
Burma . . . .	182,593	20,180	...	(g) 93,784	122,974	67.3	
Federated Shan States . .	60,614	8,067	...	21,541	24,608	40.6	
Bihar and Orissa . .	83,083	1,790	(h) 1,271	3	8,073	3.7	(h) Excludes 681 square miles not under the control of Forest Department.
Assam . . . .	55,166	6,105	...	14,302	20,467	36.9	
Central Provinces (including Barar).	99,951	(i) 10,011	...	...	10,611	19.6	(i) Includes 174 square miles of leased forests.
Coorg . . . .	1,592	519	...	...	519	32.2	
North-West Frontier Pro- vince.	13,163	(j) 217	(k)	...	245	1.8	(l) Excludes 14 square miles of Civil and Military Reserved Forests. (l) Excludes 105 square miles of civil protected forests and 133 square miles of Guzara forests.
Ajmer . . . .	2,767	141	...	...	141	5.1	
Baluchistan (portions under British Administration)	51,228†	313	...	472	785	1.4	
Andaman and Nicobar .	3,143†	52	...	2,138	2,190	60.6	(l) Includes 27 square miles of Teknali leased forests and 52 square miles of Ryots forests handed over to Panohayats.
Madras . . . .	143,257	(l) 18,914	...	(m) 319	10,237	13.4	(m) Reserved lands.
Bombay (including Sind)	123,230	18,710	1,105	...	(n) 14,905	12.1	(n) Includes 2,586 square miles of reserved and protected forests not under the management of the Forest Department.
Total 1926-29	1,103,503†	100,849	6,308	130,665	240,692	22.7	
,, 1927-28	1,103,570†	105,598	7,658	100,561	250,110	22.6	
,, 1926-27	1,000,146†	105,285	8,026	107,844	251,755	22.8	
,, 1925-26	1,099,888†	105,011	8,405	108,834	251,290	22.9	
,, 1924-25	1,000,072†	103,764	8,278	117,651	229,606	20.8	
		2,870	...	21,575	21,445	...	For Federated Shan States.

† Figures taken from the Census Report of 1921.

‡ Excluding Delhi Province and Pargana Manpur.

## STATEMENT II.

Progress made in Forest Settlements during the year 1928-29.

Province. 1	Area in square miles:			Cost during year:		Entire cost per square mile of areas finally settled. 7
	Finally settled during year. 2	In hand at commencement of year. 3	Taken in hand during year. 4	In Forest- Accounts: 5	In other Accounts 6	
Bengal . . . . .	1,187	11	1,203	1,079	...	269
United Provinces . . . . .	5	10	3	...	...	...
Punjab . . . . .	16	16	...	...	...	...
Burma . . . . .	144	1,783	434	2,187	...	...
Federated Shan States . . . . .	...	64	30	30	...	...
Bihar and Orissa . . . . .	1	2	...	...	...	...
Assam . . . . .	22	69	3	16	...	...
Central Provinces . . . . .	...	...	...	...	...	...
Coorg . . . . .	...	...	...	...	...	...
North-West Frontier Province . . . . .	9	9	...	...	...	...
Ajmer . . . . .	...	...	...	...	...	...
Baluchistan . . . . .	...	...	...	...	...	...
Andamans . . . . .	...	53	...	...	...	...
Madras . . . . .	1	118	11	...	...	...
Bombay . . . . .	48	156	31	...	...	...
1928-29 . . . . .	1,433	2,330	1,715	3,812	...	269
1927-28 . . . . .	579	1,979	2,322	28,183	...	243
Total 1926-27 . . . . .	448	2,506	570	32,703	...	...
1925-26 . . . . .	342	2,520	656	10,132	...	...
1924-25 . . . . .	651	2,662	1,056	11,008	...	15

## STATEMENT III.

## Demarcation and maintenance of boundaries.

Province.	Length of artificially demarcated boundaries during the year.	Length of previously existing boundaries repaired.	Length of previously existing boundaries not repaired.	Total length of artificially marked boundaries at the close of the year.	Length of boundaries not demarcated at the close of the year.	Length of natural boundaries not requiring artificial marks.	Total length of boundaries at the close of the year.	Expenditure on demarcation during the year.	
								On new work.	On repairs.
	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Rs.	Rs.
Bengal . . .	263	1,139	1,295	2,696	125	1,174	3,995	1,099	8,636
United Provinces . .	25	2,870	5,762	8,637	2	2,653	11,462	2,679	20,663
Punjab . . .	23	1,598	6,521	8,375	5	1,416	9,798	1,340	5,080
Burma . . .	357	3,316	13,919	17,622	157	3,307	21,086	5,306	83,505
Federated Shan States	15	277	1,010	1,311	...	523	1,804	539	1,644
Bihar and Orissa	101	2,842	1,864	4,800	40	384	5,233	704	2,862
Assam . . .	9	1,237	1,315	2,551	20	2,302	4,853	510	10,401
Central Provinces . .	372	7,005	23,868	31,755	60	3,351	35,121	67	20,704
Coorg . . .	...	92	377	469	...	67	536	...	2,223
North-West Frontier Province.	...	118	659	777	...	139	916	...	1,153
Ajmer . . .	...	13	220	233	...	153	391	...	207
Baluchistan . . .	...	2	465	466	...	77	637	47	5
Andamans . . .	...	...	...	36	36	23	59	...	...
Madras . . .	259	15,924	6,431	22,602	408	2,465	26,282	6,850	3,942
Bombay . . .	100	25,126	13,034	38,260	46	2,820	41,126	650	3,706
<hr/>									
1928-29 .	1,523	62,759	76,037	140,633	808	21,061	163,419	20,759	1,16,120
1927-28 .	816	63,675	75,613	136,037	1,057	20,936	162,044	16,503	1,07,753
Total 1926-27 .	1,005	63,036	76,880	141,769	1,134	20,713	163,580	25,006	90,782
1925-26 .	438	69,957	79,501	149,412	1,405	20,872	171,613	9,849	1,05,757
1924-25 .	903	69,637	78,784	149,663	1,606	21,923	182,607	17,101	1,00,429

## STATEMENT IV.

Forest survey Operations from 1st April 1928 to 31st March 1929.

Province.	Forest surveyed.	Nature of survey operations.						Total area of detail survey.	Expenditure of the year including mapping and publishing charges debitable to Forests.	Remarks.			
		1"		2"		4"							
		Detail survey.	Area.	Cost rate.	Detail survey.	Area.	Cost rate.						
1	2	3	4	5	6	7	8	9	10	11	12		
											Rs. A. P.		
Andamans	...	...	...	...	...	...	...	...	527	....			
Assam	...	...	...	...	...	...	...	...	5684 1	....			
Pengal	Buxn . . .	18	...	...	...	...	...	45 18	4761 7	....			
Bihar and Orissa.	Hazaribagh . . .	18 36	..	...	...	...	...	(a) 18 36	2100 95	....			
	Palman . . .	8 33	..	...	...	...	...	3 33					
N.W. F. P.	...	...	...	...	...	...	...	...	165 00	....			
Baluchistan	...	...	...	...	...	...	...	...	241 3	....			
Punjab	Changa Manga . . .	...	...	...	...	20 0	64 6	20 0	4355 0	1,001 0 0			
United Provinces.	...	...	...	...	...	..	...	...	7142 7	....			
Ajmer	...	...	...	...	...	...	...	...	172 01	....			
Madras	Lower Godavari . . .	...	...	116	53 3	...	...	(b) 116	18211	6,120 0 0	(b) Actual survey 42 sq. miles overlapping survey 74 sq. miles.		
India.	...	...	...	..	..	...	...	...	...	....			
Coorg	...	..	..	..	..	..	..	..	478	....			
Central Provinces.	...	..	..	..	..	..	..	..	19535	....			
Bombay	...	..	..	..	..	..	..	..	13232 9	....			
	Henzada and Maubin . . .	761 18	...	...	...	4 65	..	768 76			S 5 L. M. of Boundary Survey.		
Burma	South Arakan . . .	205 28	..	..	..	..	..	(c)	203 98		(c) Cost is not debitable to Forest Department.		
	Thayetmoe . . .	15 36	..	..	..	..	..	..	15 36				

STATEMENT IV—*contd.*Forest survey Operations from 1st April 1928 to 31st March 1929—*contd.*

Province.	Forest surveyed.	Nature of survey operations.						Total area of detail survey.	Expenditure of the year including mapping and publishing charges debitable to Forests.	Remarks.			
		1"		2"		4"							
		Detail survey.	Area.	Detail survey.	Area.	Detail survey.	Area.						
1	2	3	4	5	6	7	8	9	10	11	12		
										Rs. A. P.			
	South Pegu . . .	...	...	60	...	45 00	..	(e) 51		(e) Includes Rs. 112 cost of 2 L. M. traversed after 31st March 1928, Rs. 1,037 cost of computation of 61 L. M. traversed (59 L. M. last year 2 L. M. this year), Rs. 8,304 cost of 31 sq. miles surveyed before 31st March 1929 cost of balance 8 miles will appear in 1929-30, and cost of 23 L. M. of traversing commenced after 31st March 1929, and completed before 30th June 1929 will appear in next return for 1929-30, also cost of 6 sq. miles of Tamabon Reserve Forest Revised on 2-inch scale.			
	Kutha . . .	...	...	...	...	64 18	...	(f) 64 18		(f) Excludes 4 75 sq. miles of unclassified forests.			
	Mansi . . .	...	...	...	...	166 69	...	(g) 166 69	2,47,670 0 0	(g) Excludes 0 08 sq. miles of unclassified forests.			
	Upper Chindwin (h) . . .	...	...	...	...	...	...	...		(h) 116 7 L. M. of boundary traversing and 9 3 L. M. of tie lines were done cost for this not paid for by Forest Department.			
Burma— <i>contd.</i>	Insein (j) . . .	...	...	...	...	...	...	...		(j) Includes Ra. 5,465 cost of 18 sq. miles on 4-inch scale surveyed last year and cost of fair mapping.			
	Magwe . . .	...	...	...	...	...	...	...		Includes Ra. 667 the cost of traverse computation of 51 L. M. traversed last year and Rs. 600 cost of survey of 4 sq. miles surveyed after 31st March 1928 in season 1927-28.			
	Meiktila . . .	...	...	...	...	...	...	...					
	Yamethin . . .	...	...	...	...	...	...	...					
	Prome . . .	...	...	...	...	...	...	...					
	Dolia . . .	...	...	...	...	...	...	...					
	Thaton . . .	...	...	...	...	...	...	...					
	Mu (k) . . .	...	...	...	...	...	...	...					
										(l) Cost of survey to end of field season 1927-28 (area reported in form 10 of last year) and cost of mapping.			
TOTAL 1928-29	1st April 1928 to 31st March 1929.	1006 46	...	122	...	800 52	..	1474 11	102549 73	Rs. A. P. 2,50,791 0 0	Rs. 36,000		
" 1927-28	1st April 1927 to 31st March 1928.	1271 50	...	88	...	1773 82	..	8098 82	101075 62	2,25,839 0 0	36,000		
" 1926-27	1st April 1926 to 31st March 1927.	477	...	743	...	162	..	1832	97092	2,10,871 6 0	36,000		
" 1925-26	1st April 1925 to 31st March 1926.	382	...	215	...	400	..	1006	90600	2,46,033 2 0	36,000		
" 1924-25	1st April 1924 to 31st March 1925.	756	...	61	..	305	..	1212	96594	2,05,175 11 0	30,000		

## STATEMENT V.

## Progress made in working plans.

PROVINCE.	Area under sanctioned working plans.					Area not under working plans.					Revisions.			
	At commencement of the year.		Added during the year.		Deducted during the year.	At close of year.		Plans not under preparation.			Total forest area (as shown in column 10).	Total forest area in State front I. (Total of columns 5, 7, 8 and 10)	Due or required.	In progress at the end of the year.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sq. m.	Sq. m.	Sq. m.	Sq. m.	Sq. m.	Sq. m.	Sq. m.	Sq. m.	Sq. m.	Sq. m.	Sq. m.	Sq. m.	Sq. m.	Sq. m.	Rs.
Bengal . . .	6,616	1,008	1,103	6,811	61	Sq. m.	1	...	3,723	10,535	...	4,576	...	6,059
United Provinces . .	5,025	6	60	4,072	93	103	1	63	5,201	..	1,363	702	41,434	
Punjab . . .	2,511	...	3	2,503	47	204	1	2,033	5,942	..	557	138	2	
Burma . . .	15,724	3,244	31	18,015	63	6,933	1,316	2,623	22,193	(a)	13	3,737	1,101	63,637
Federated Shan States .	1,138	..	...	1,136	37	47	44	1,600	(a)	186	...	...	...	
Bihar and Orissa .	2,044	...	..	2,041	6641	124	...	615	3,013	...	323	94	1,763	
Assam . . .	240	...	...	216	12	1,703	2,834	15,591	23,467	314	...	...	...	7,457
Central Provinces .	17,592	225	0	17,303	89	...	22	2,111	19,611	593	1,524	3,546	...	
Gorakhpur . . .	519	..	..	519	100	...	..	..	519	519	140	..	..	
North-West Frontier Province.	215	..	..	225	100	...	..	..	215	4	76	..	..	2,457
Ajmer . . .	141	..	..	131	100	...	..	..	131	..	..	..	..	
Baluchistan . . .	..	..	..	..	..	..	..	785	785	..	..	..	..	
Andamans . . .	703	..	..	703	324	..	..	1,182	2,183	274	..	..	..	
Madras . . .	5,823	2,915	...	8,738	46	3,511	2,524	4,578	19,620	...	...	..	..	
Bombay . . .	8,035	220	212	8,319	67	373	660	8,230	12,552	1,180	680	223	9,910	
TOTAL 1928-29 .	60,565	7,714	1,439	53,570	532	12,463	7,271	39,463	131,908	2,077	13,279	5,896	1,41,709	
" 1927-28 .	63,491	1,053	126	65,245	417	10,605	19,233	42,409	132,310	2,101	17,206	1,032	88,926	
" 1926-27 .	60,059	4,021	316	63,717	478	10,254	14,161	44,335	133,105	5,126	13,608	1,564	1,08,296	
" 1925-26 .	61,139	303	269	60,050	462	10,535	17,442	42,761	132,662	3,705	8,700	231	1,71,586	
" 1924-25 .	51,313	2,580	530	51,354	446	9,421	16,794	41,226	121,716	4,323	6,220	1,403	1,03,30	

(a) Excluding unclassed forests.

(b) Includes 65 square miles of reserved lands and 45 square miles of leased forests under working plans, which if added to figures shown in column 3 of Statement I (excluding Tekadi leased forests 27 square miles) will agree with this total.

(c) Includes 23 square miles of Konara Coast Division, which if added to figures shown in column 6 of Statement I (after deducting 2,586 square miles Forest Department) will agree with this total.

## STATEMENT VI.

## Expenditure on communications and buildings.

Province. 1	New Works.		Repairs.		Other Works. 6	Total. 7
	Buildings. 2	Roads and paths. 3	Buildings. 4	Roads and paths. 5		
	Rs.	Rs.	Rs.	Rs.		
Bengal . . . . .	61,765	8,025	48,847	49,436	20,593	1,88,766
United Provinces . . . . .	93,351	84,906	1,29,725	1,42,342	30,688	4,37,612
Punjab . . . . .	68,793	18,137	27,182	84,204	15,478	1,64,194
Burma . . . . .	2,45,786	3,75,366	1,21,791	1,67,125	86,820	9,96,588
Federated Shan States . . . . .	6,926	9,628	5,185	4,819	1,191	27,749
Bihar and Orissa . . . . .	58,009	30,037	26,258	36,097	11,468	1,61,564
Assam . . . . .	68,407	44,461	56,581	1,41,237	23,547	3,34,236
Central Provinces . . . . .	1,06,821	1,19,419	87,275	88,439	47,611	4,29,565
Coorg . . . . .	5,443	6,417	6,319	5,251	1,895	26,085
North-West Frontier Province . . . . .	20,611	10,265	2,823	4,891	1,495	49,085
Ajmer . . . . .	2,639	690	258	1,280	745	5,821
Baluchistan . . . . .	647	—	192	95	...	934
Andamans . . . . .	56,935	2,450	9,904	697	60,667	1,30,663
Madras . . . . .	1,12,475	89,259	60,225	99,914	12,053	3,79,926
Bombay . . . . .	73,788	1,39,210	39,136	1,06,080	16,414	3,74,664
Total 1928-29	9,68,396	8,98,325	6,07,229	8,82,607	8,30,605	87,07,252
,, 1927-28	11,04,650	7,90,863	5,95,873	9,93,460	2,51,631	36,75,977
,, 1926-27	9,46,939	8,27,657	5,54,748	8,65,997	2,66,612	34,71,948
,, 1925-26	5,70,767	5,82,638	5,18,251	7,68,474	2,19,498	26,65,828
,, 1924-25	8,72,745	6,65,589	5,10,974	7,07,558	2,01,766	29,53,362

## STATEMENT VII.

## Breaches of forest rules.

Province.	Cases pending from 1927-28.	New Cases of the year.						Total cases.	Disposed of during the year.						Cases pending at close of year.
		Injury to forest by fire.	Unauthorised felling or appropriation of wood and minor forest produce.	Grazing without permission or in tracts in which grazing is prohibited.	Other offences.	Total new cases of the year.	Cases.		Cases.	Persons.	Cases.	Persons.	Cases.	Persons.	
		3	4	5	6	7	9		10	11	12	13	14	15	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Bengal	A.	54	...	131	16	69	218	272	188	428	80	153	168	579	95
	B.	96	2	1,422	1,693	1,254	4,376	4,472	4,400	7,829	5	5	4,405	7,834	66
	C.	...	34	286	6	19	345	345	...	...	...	...	...	...	...
	Total	150	86	1,639	1,722	1,343	4,039	5,069	4,583	8,255	35	158	4,573	8,413	161
United Provinces	A.	86	17	83	26	43	119	155	78	299	10	72	97	371	57
	B.	470	118	1,044	1,775	987	4,524	4,994	4,015	10,441	389	869	4,404	11,310	590
	C.	...	100	70	18	42	315	315	...	...	...	...	...	...	...
	Total	506	325	1,747	1,814	1,072	4,058	5,464	4,093	10,740	408	941	4,501	11,681	647
Punjab	A.	1,092	27	510	585	507	1,589	2,691	1,293	2,187	155	409	1,448	2,606	1,216
	B.	2,130	43	3,616	6,467	8,660	18,786	15,916	11,491	18,648	...	1	11,481	18,649	2,207
	C.	...	119	16	44	78	257	257	...	...	...	...	...	...	...
	Total	3,223	170	4,172	7,016	4,215	15,642	18,864	12,774	15,845	155	410	12,920	18,255	3,425
Burma	A.	...	...	1,084	78	850	1,462	2,361	1,716	2,851	184	511	1,800	2,863	...
	B.	...	2	7,171	410	1,016	9,538	11,311	9,022	10,654	...	...	9,022	10,654	...
	C.	...	...	64	7	8	79	79	...	...	...	...	...	...	...
	Total	*2,672	2	8,209	504	2,304	11,079	18,751	10,738	18,005	184	511	10,022	18,516	*2,150
Federated Shan States	A.	...	...	...	...	5	5	6	5	3	1	1	6	4	...
	B.	...	...	107	15	15	187	150	117	141	...	...	117	141	...
	C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Total	*14	...	107	15	20	142	156	122	144	1	1	123	115	*16
Bihar and Orissa	A.	60	13	166	83	61	272	341	201	511	62	267	263	808	21
	B.	171	3	1,673	321	59	2,056	2,227	2,106	5,248	1	1	2,107	5,244	104
	C.	...	60	20	...	...	60	60	...	...	...	...	...	...	...
	Total	210	76	1,859	353	120	2,408	2,648	2,307	5,784	68	263	2,370	6,052	128
Assam	A.	97	...	170	11	70	251	348	249	806	30	112	270	508	66
	B.	211	2	1,000	40	305	1,547	1,761	1,573	2,808	2	5	1,575	2,313	186
	C.	...	1	...	...	...	1	1	...	...	...	...	...	...	...
	Total	311	3	1,170	51	575	1,799	2,110	1,822	2,704	32	117	1,654	2,821	253
Central Provinces	A.	60	7	115	110	84	296	856	251	629	60	167	311	790	45
	B.	2,178	191	7,456	9,006	1,012	17,665	10,843	18,017	48,243	11	8	18,028	48,231	1,815
	C.	...	622	780	60	55	1,482	1,482	...	...	...	...	...	...	...
	Total	2,238	620	8,307	9,215	1,101	18,443	21,681	18,268	48,872	71	175	18,339	49,047	1,560
Goorg	A.	2	...	2	1	3	8	5	4	8	1	2	5	10	...
	B.	1	...	15	17	10	42	43	35	43	8	14	43	57	...
	C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Total	8	...	15	19	11	45	48	39	51	9	16	48	67	...
North-West Frontier Province	A.	184	18	83	59	19	178	362	197	347	32	76	220	423	128
	B.	...	2	1,677	2,272	42	3,933	3,933	3,936	5,520	..	..	3,966	5,520	7
	C.	...	15	17	20	...	52	52	...	...	...	...	...	...	...
	Total	184	35	1,770	2,351	61	4,223	4,407	4,183	5,867	32	76	4,215	5,913	135

\* Burma and Federated Shan States have not shown separately "A", "B," and "C" in columns 2 and 15. They have given the totals only.

STATEMENT VII—*contd.*Breaches of Forest rules—*contd.*

Province.	Cases pending from 1927-28.	New Cases of the year.						Total cases.	Disposed of during the year.						Cases pending at close of year.	
									Convictions.		Acquittals.		Totals.			
		Injury to forest by fire.	Unauthorized fellings or appropriation of wood and minor forest produce.	Grazing without permission, or in tracts in which grazing is prohibited.	Other offences.	Total new cases of the year.	Cases.	Persons.	Cases.	Persons.	Cases.	Persons.	Cases.	Persons.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
Ajmer	A.	3	...	...	4	1	5	8	7	13	1	3	8	16	...	
	B.	...	12	322	1,322	20	1,676	1,676	3,380	...	...	1,676	3,386	..		
	C.	...	1	...	...	...	1	1	...	...	...	...	...	...		
Baluchistan	Total	3	18	323	1,828	21	1,682	1,685	1,683	8,399	1	3	1,684	3,402	..	
	A.	11	...	15	14	8	82	43	27	79	4	11	31	90	12	
	B.	...	...	83	177	7	222	222	222	309	...	...	222	300	...	
Andamans	Total	11	...	53	191	10	251	265	249	858	4	11	253	399	12	
	A.	1	...	4	...	...	4	5	5	5	1	...	5	5	...	
	B.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Madras	Total	1	...	4	...	...	4	5	5	5	1	...	5	5	...	
	A.	1,618	47	3,197	616	218	4,108	5,926	2,710	7,790	2,051	5,935	4,704	13,674	1,132	
	B.	2,663	171	16,069	3,103	1,041	19,384	22,247	16,192	32,421	1,949	4,586	18,141	37,007	4,105	
Bombay	C.	5	842	332	24	21	1,922	1,327	...	...	...	...	...	...	..	
	Total	4,656	1,060	18,598	3,773	1,283	24,714	29,400	18,902	40,160	4,033	10,521	22,035	50,681	5,237	
	A.	103	37	226	77	94	434	627	880	836	62	152	442	986	185	
Grand Total	B.	1,022	232	8,513	6,391	2,095	17,211	18,263	16,481	37,765	4	6	16,435	37,771	1,778	
	C.	...	1,699	1,474	32	41	3,419	3,491	...	...	...	...	...	...	..	
	Total	1,915	2,168	10,213	6,500	2,223	21,121	22,381	16,861	38,601	66	158	16,027	38,759	1,063	
GRAND TOTAL	A.	8,620	156	5,718	1,642	1,475	8,986	13,506	7,261	15,860	2,725	7,871	10,086	23,710	2,962	
	B.	9,145	703	49,723	33,023	12,613	98,187	107,118	60,323	177,051	2,300	5,405	91,659	183,446	10,859	
	C.	5	8,783	8,015	215	270	7,983	7,980	...	...	...	...	...	...	...	
Total 1928-29	.	12,770	4,787	58,451	34,660	11,388	112,456	126,004	96,584	103,590	5,091	13,300	101,745	207,186	13,620	
" 1927-28	.	13,338	4,366	57,518	35,016	13,291	110,221	125,296	97,581	107,061	6,051	14,081	103,012	211,145	18,025	
" 1926-27	.	12,424	4,005	57,363	36,033	12,653	110,160	124,047	95,676	108,907	5,015	14,030	101,291	210,957	18,329	
" 1925-26	.	14,627	4,270	51,554	36,126	11,710	106,029	119,950	93,921	103,822	6,507	17,273	100,433	215,796	11,608	
" 1924-25	.	16,613	4,307	53,402	34,018	10,134	101,685	116,325	90,469	102,111	6,017	15,878	96,456	219,090	12,625	

N.B.—A. Cases taken into Court.

B. Cases compounded.

C. Undelicted cases.

## STATEMENT VIII.

Area protected from fire.

Province. 1	Area in square miles.		Percentage of forests under fire protection to total area of reserves. 4	Percentage of failure to area attempted. 5		Remarks. 7		
	Attempted. 2	Protected. 3		Average of past five years to 1927-28. 6				
				1928-29. 1	1927-28. 2			
Bengal . . . . .	1,544	1,541	23·0	2·8	0·2			
United Provinces . . . . .	3,278	3,223	63·5	1·9	1·6			
Punjab . . . . .	1,322	1,316	86·3	1·04	0·4			
Burma . . . . .	124	117	0·43	7·8	5·6			
Federated Shan States . . . . .	4	4	0·13	...	...			
Bihar and Orissa . . . . .	1,542	1,495	85·7	4·4	3·7			
Assam . . . . .	65	50	1·06	52·6	23·0			
Central Provinces . . . . .	11,588	10,994	58·9	5·8	5·1			
Coorg . . . . .	186	185	35·8	2·8	0·5			
North-West Frontier Province . . . . .	87	85	35·5	4·6	2·3			
Ajmer . . . . .	140	139	99·3	...	0·7			
Madras . . . . .	15,108	14,374	79·8	2·9	4·8			
Bombay . . . . .	9,007	8,489	65·7	3·7	5·8			
Total 1928-29 . . . . .	43,993	41,993	41·1	3·8	4·5			
" 1927-28 . . . . .	42,173	40,208	39·0	8·2	4·6			
" 1926-27 . . . . .	38,814	37,659	36·0	9·0	2·9			
" 1925-26 . . . . .	41,041	40,811	89·9	5·7	28·0			
" 1924-25 . . . . .	44,201	42,847	42·6	10·0	3·1			

## STATEMENT IX.

## Causes of forest fires.

Province. 1	Fires originating in Departmental fire conservancy operations. 2		External fires crossing the fire traces. 4		Fires due to carelessness of outsiders. 6		Fires originating from intention or malice. 8		Fires due to unknown causes. 10		Total. 12	
	No. 2	Sq. M. 3	No. 4	Sq. M. 5	No. 6	Sq. M. 7	No. 8	Sq. M. 9	No. 10	Sq. M. 11	No. 12	Sq. M. 13
Bengal . . . . .	1	...	5	2	17	1	1	...	10	...	34	3
United Provinces . . . . .	51	5	40	10	105	16	31	18	49	6	276	55
Punjab . . . . .	3	...	19	2	117	2	53	8	4	1	100	8
Burma . . . . .	6	...	7	1	27	2	14	3	11	1	63	7
Federated Shan States . . . . .	...	...	...	...	...	...	...	...	...	...	...	...
Bihar and Orissa . . . . .	10	0	11	7	13	0	2	...	51	38	90	57
Assam . . . . .	28	8	5	6	1	...	1	1	1	...	36	15
Central Provinces . . . . .	81	18	181	106	210	145	16	4	603	325	974	593
Coorg . . . . .	5	...	2	...	...	...	10	...	...	...	17	...
North-West Frontier Province . . . . .	...	...	4	...	7	...	27	1	...	...	38	1
Ajmer . . . . .	1	...	...	...	10	1	...	...	1	...	12	1
Baluchistan . . . . .	...	...	...	...	...	...	...	...	...	...	...	...
Andamans . . . . .	...	...	...	...	...	...	...	...	...	...	...	...
Madras . . . . .	30	8	150	116	330	231	300	140	879	212	1,650	736
Bombay . . . . .	29	12	202	163	676	117	143	12	1,136	315	2,168	619
Total 1928-29 . . . . .	196	52	626	412	1,513	521	698	182	2,650	928	5,615	2,095
" 1927-28 . . . . .	124	61	536	304	1,385	412	626	564	2,130	792	4,000	2,065
" 1926-27 . . . . .	246	70	464	142	1,317	264	670	166	1,817	645	4,523	1,286
" 1925-26 . . . . .	172	83	501	178	1,284	317	603	123	1,388	620	4,418	1,371
" 1924-25 . . . . .	188	49	447	160	1,286	201	568	114	1,744	732	4,948	1,376

## STATEMENT X.

Area closed and open to grazing.

Province.	Area in Square Miles.							Total area as shown in Statement No. I (Col. 6.)	
	Closed to all animals,		Open to grazing.						
	Whole year.	Part of year.	Of all animals,		Of all animals except browsers (camels, sheep and goats),				
1	2	3	4	5	6	7	8		
Bengal . . . . .	6,284	...	4,125	...	68	63		10,635	
United Provinces . . . . .	2,051	70	2,921	10	821	28		5,201	
Punjab . . . . .	382	95	4,198	138	840	189		5,341	
Burma . . . . .	22,014	..	58	185	2,455	4,418		122,074	
Federated Shan States . . . . .	2,208	...	...	81	717	61		24,608	
Bihar and Orissa . . . . .	613	...	661	...	1,560	236		3,073	
Assam . . . . .	4,388	...	14,497	...	1,572	...		20,407	
Central Provinces . . . . .	2,938	54	8,440	12	18,214	42		19,641	
Coorg . . . . .	60	439	...	...	...	439		519	
North-West Frontier Province . . . . .	68	...	8	...	174	..		245	
Ajmer . . . . .	57	81	...	...	3	81		141	
Baluchistan . . . . .	174	...	91	87	...	11		785	
Andamans . . . . .	52	...	...	...	358	...		2,190	
Madras . . . . .	1,854	52	12,910	207	844	9		19,257	
Bombay . . . . .	1,076	279	3,538	...	9,412	...		14,905	
TOTAL . . . . .	1928-29 . . . . .	44,809	1,070	45,747	670	31,533	5,607	249,822	
	1927-28 . . . . .	44,676	1,572	49,851	899	31,028	5,400	183,821	
	1926-27 . . . . .	44,699	1,707	51,291	641	30,401	5,280	184,035	
	1925-26 . . . . .	45,109	1,731	50,240	573	30,470	5,678	133,802	
	1924-25 . . . . .	45,656	2,036	51,842	569	29,782	5,640	185,726	

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**STATEMENT XI.**  
**Protection from Cattle.**

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STATE  
Protection

Province.	Grazed on payment, number of animals.											
	At full rates.					At privileged rates.					Camels.	Other animals.
	Buffaloes.	Cows and bullocks.	Goats and sheep.	Camels.	Other animals.	Buffaloes.	Cows and bullocks.	Goats and sheep.	Camels.	Other animals.		
1	2	3	4	5	6	7	8	9	10	11		
Bengal . . . . .	2,687	24,671	204	...	30	451	16,983	...	...	...	3	
United Provinces . . . . .	92,659	154,753	122,863	2,676	2,333	6,653	23,511	8,370	180	168		
Punjab . . . . .	11,717	40,845	453,917	21,385	616	343	9,320	470,904	...	...	146	
Burma . . . . .	4,577	20,580	...	17	...	...	...	...	...	...		
Federated Shan States . . . . .	3,612	1,408	...	...	...	...	...	...	...	...		
Bihar and Orissa . . . . .	9,810	20,125	1,898	...	4	8,773	18,021	...	...	...		
Assam . . . . .	12,913	5,884	873	...	181	371	...	...	...	...		
Central Provinces . . . . .	279,126	705,836	351,371	37	3,336	141,167	1,341,672	1,503	...	...	66	
Coorg . . . . .	872	3,866	...	...	...	...	...	...	...	...		
North-West Frontier Province . . . . .	2,631	4,351	368	...	30	...	...	...	...	...		
Ajmer . . . . .	1,711	12,660	...	2	...	4,598	16,540	...	...	...		
Balochistan . . . . .	27	1,962	9,007	...	113	...	...	...	...	...		
Madras . . . . .	81,000	1,070,878	989,860	...	35	19,150	109,558	105,914	...	...		
Mumbai . . . . .	28,690	88,742	145,778	753	5,991	231,162	1,077,297	374,052	...	3,313		
Total 1928-29 . . . . .	501,532	2,171,010	2,075,688	24,670	12,669	412,663	3,112,907	969,838	180	3,598		
" 1927-28 . . . . .	495,896	2,142,272	1,902,245	57,641	14,667	395,816	3,082,406	1,016,694	...	4,146		
" 1926-27 . . . . .	493,666	1,822,588	1,517,036	110,401	18,150	383,373	3,022,782	971,465	896	4,239		
" 1925-26 . . . . .	483,186	2,249,581	1,635,930	39,670	18,453	372,472	2,907,023	1,012,376	1,139	4,647		
" 1924-25 . . . . .	1,705,579				61,763	13,467	9,387,314	1,040,127	741	6,688		

## MENT XI.

from cattle.

Grazed free, number of animals.											Total number of animals grazed.	
By right under settlement.					During pleasure of Government or otherwise than under settlement.							
Buffaloes.	Cows and bullocks.	Goats and sheep.	Camels.	Other animals.	Buffaloes.	Cows and bullocks.	Goats and sheep.	Camels.	Other animals.			
12	13	14	15	16	17	18	19	20	21	22		
...	...	...	...	...	1,765	4,418	10	...	18	51,245		
40,078	463,311	42,472	...	1,420	7,890	36,901	61,306	...	186	1,037,380		
132,113	657,700	1,881,349	325	199,162	6,708	31,760	...	43	2,773	8,353,480		
169,470	298,323	120	...	1,306	18,149	1,087	...	...	9,830	529,474		
1,860	20,073	...	...	...	806	91	...	...	200	28,110		
42,313	214,447	78,156	...	14	313	1,453	1,051	...	30	426,408		
29	89	...	...	...	5,012	7,274	2,609	...	...	34,733		
...	375	...	...	...	1,012	288,071	95	...	189	3,584,755		
6	412	...	...	...	1,874	16,208	...	...	...	21,733		
5,806	6,099	...	...	...	2	2	...	...	...	19,449		
456	1,873	...	...	...	...	...	...	...	...	37,840		
...	3,310	58,226	1	1,193	...	...	...	...	...	68,890		
1,311	7,703	4,096	...	...	8,011	61,141	112	...	...	2,168,441		
2,419	6,062	...	...	11	85,432	446,095	857	1,010	3,561	2,501,805		
895,498	1,710,456	1,618,008	326	203,406	136,934	816,151	60,130	1,053	16,793	14,173,803		
890,684	1,087,046	1,408,673	326	203,418	140,084	843,760	70,536	9,762	17,158	10,974,041		
403,607	1,607,932	1,429,949	286	189,114	135,853	817,560	71,250	8,606	18,582	18,080,807		
398,352	1,739,884	1,451,429	286	190,344	139,006	828,484	69,778	5,178	18,000	18,501,541		
890,695	1,687,041	1,460,837	286	189,193	1,014,692		118,427	1,600	10,028	18,614,219		

## STATEMENT XII.

Progress on regeneration and afforestation.

Province.	Area under regeneration at close of year. 1	Area on which regeneration was completed during the year. 2	Plantations not under working plans added during the year. 3	Expenditure during the year. 4
				Acrea. 5
Bengal	362	2,227	21	70,377
United Provinces	2,24,802	18,096	—	1,45,767
Punjab	13,492	6,875	653	2,58,109
Burma	1,538	4,466	—	1,67,856
Federated Shan States	308	358	—	44,195
Bihar and Orissa	22,584	14,976	296	15,834
Assam	1,146	—	842	17,970
Central Provinces	13,411	537	1,358	4,791
Coorg	627	191	347	18,981
North-West Frontier Province	6,061	220	4	4,778
Ajmer	17,739	1,584	—	525
Baluchistan	70	—	1	1,022
Andaman	—	—	63	9,845
Madras	175	1,069	1,027	67,870
Bombay	69,572	38,950	11,709	75,265
TOTAL 1928-29	371,962	84,030	16,321	8,91,455
" 1927-28	804,210	57,240	18,033	8,84,112

\* Included in Col. 2.

## STATEMENT XIII.

## Outturn of forest produce.

Province.	Reserved Forests,		Protected Forests,		Unclassed Forests,		TOTAL,		Average Outturn per Square Mile.								
			Timber and fuel.	Minor produce.	Timber and fuel.	Minor produce.			Timber and fuel.	Minor produce.	Timber and fuel.	Minor produce.	Timber and fuel.	Minor produce.	Timber and fuel.	Minor produce.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		C. ft.	Rs.	C. ft.	Rs.	C. ft.	Rs.	C. ft.	Rs.	C. ft.	Rs.	C. ft.	Rs.	C. ft.	Rs.	C. ft.	Rs.
Bengal	80,969,000	(a)	4,61,730	744,000	10,175	1,410,000	63,100	33,143,000	5,81,014	4,701	70	1,185	25	416	18	2,140	50
United Provinces	34,805,000	(b)	14,70,500	21,000	723	93,000	8,770	34,023,000	15,81,008	6,740	286	5,260	160	2,674	99	6,714	295
Punjab	10,357,000	(c)	14,10,930	18,936,000	13,03,303	6,308,000	63,090	82,501,000	(d)	6,095	931	4,904	403	10,031	107	6,003	621
Burma	50,470,000	4,75,885	...	...	71,701,000	4,63,201	122,177,000	9,80,086	1,730	16	...	...	704	6	903	7	
Federated States	3,043,000	45,778	...	...	2,071,100	6,69,255	8,714,100	7,15,033	992	16	...	...	124	31	233	29	
Bihar and Orissa	4,250,000	1,00,291	5,625,000	1,57,872	...	...	...	9,891,000	2,69,103	2,365	57	4,425	134	...	...	3,215	84
Assam	7,711,000	(e)	2,78,050	...	...	11,354,000	6,02,910	19,126,000	9,70,200	1,269	45	...	...	796	48	937	47
Central Provinces	49,974,000	(f)	32,12,350	...	...	...	...	40,878,000	82,52,350	2,386	105	...	...	...	...	2,386	165
Coorg	377,474	38,833	149,958	106	...	...	...	520,432	30,020	737	75	...	...	...	...	1,014	75
North-West Frontier Province	2,045,000	(g)	1,14,355	...	...	...	...	2,045,000	1,14,355	12,082	407	...	...	...	...	12,032	407
Ajmer	405,345	60,560	...	...	...	...	...	405,345	60,560	2,874	360	...	...	...	...	2,874	360
Baluchistan	127,250	44,323	...	...	150,958	65	263,203	44,868	405	141	...	...	298	...	312	58	
Andamans	168,000	2,928	...	...	2,816,000	6,563	3,063,000	9,539	3,615	67	...	...	1,917	3	1,371	6	
Madras	18,172,000	(h)	6,65,351	...	...	4,165,000	13,31,670	22,331,000	10,80,031	901	34	...	...	12,122	3,682	1,150	103
Bombay	23,591,000	(i)	10,87,339	32,373,000	9,073	270,000	...	50,943,000	30,00,431	1,706	146	27,000	7	...	...	3,760	135
TOTAL 1923-24	234,026,000	1,04,07,186	64,847,058	14,77,345	101,032,058	32,03,698	380,026,085	1,51,78,816	2,100	97	8,805	231	730	23	1,56	60	
" 1927-28	217,038,315	1,03,91,058	26,000,167	14,71,021	97,080,256	25,48,751	370,173,707	1,49,15,303	2,315	97	8,277	103	703	18	1,480	67	
" 1930-31	248,248,014	90,01,583	21,490,407	25,42,018	92,300,095	29,81,252	361,035,000	1,45,57,003	3,358	80	8,101	202	650	21	1,443	5	
" 1925-26	241,011,023	23,75,275	26,002,185	23,02,410	95,730,803	37,59,270	361,704,051	1,43,00,001	2,201	89	8,070	571	693	10	1,433	78	
" 1924-25	237,028,004	1,07,01,103	20,633,030	12,40,907	91,125,147	17,05,493	356,263,800	1,87,18,501	2,200	108	8,205	161	773	15	1,110	60	

(a) Includes leased lands,  
(b) forests.  
(c) " Rs. 610, on account of fruit culture.  
(d) " 1,51,777 profit on resin for 1927-28.  
(e) " Shared forests.  
(f) " Gujarat forests.  
(g) Reserved and unreserved lands.

(h) Sandal wood—  
Kg. Mds. lbs.  
630 17 274  
65 10 18 white wood billets, etc.  
135 o.d. Seated wood,  
and exsic rejected pieces,  
1,500 tree,  
129 rejected roots,  
210 branches,  
0½ cart loads kodi chalan,  
174 kilograms bachi chalan,

## STATEMENT XIV.

Forest produce removed by different agencies.

## Part I.—Timber and Fuel.

Province. 1	Timber.					Fuel.				
	By Govern- ment. 2	By pur- chaser. 3	By free grantees. 4	By right holders. 5	TOTAL. 6	By Govern- ment. 7	By pur- chaser. 8	By free grantees. 9	By right holders. 10	TOTAL. 11
	C. ft.	C. ft.	C. ft.	C. ft.	C. ft.	C. ft.	C. ft.	C. ft.	C. ft.	C. ft.
Bengal . . . . .	231,700	17,250,000	10,000	...	18,500,000	1,015,000	18,125,000	425,000	...	18,425,000
United Provinces . . . . .	316,000	8,158,700	65,000	583,000	9,422,000	315,000	11,301,000	1,015,000	12,940,000	12,478,000
Jerria . . . . .	1,156,000	2,040,000	64,000	1,274,000	4,574,000	1,635,000	2,769,000	16,000	23,503,000	27,951,000
Burma . . . . .	3,743,000	87,593,000	235,000	2,624,000	66,139,000	599,000	21,414,000	63,000	637,000	55,733,000
Federated Shan States . . . . .	4,200	4,533,400	12,400	222,400	4,731,400	71,000	290,000	...	552,700	932,700
Ihar and Orissa . . . . .	163,000	2,065,000	83,000	426,000	2,772,000	169,000	2,337,000	59,000	4,241,000	7,109,000
Azam . . . . .	359,000	10,160,000	637,000	...	11,054,000	309,000	3,563,000	3,667,000	7,000	5,441,000
Central Provinces . . . . .	6,007,000	4,521,000	212,000	1,000	11,271,000	13,241,000	20,109,000	3,125,000	132,000	31,674,000
Coorg . . . . .	135,316	120,050	...	...	255,376	101,100	160,048	...	...	271,057
North-West Frontier Province . . . . .	654,000	50,000	5,000	4,000	613,000	342,000	143,000	1,220,000	816,000	2,035,000
Ajmer . . . . .	...	4,677	...	32	4,909	191,688	208,778	..	..	402,436
Pakistan . . . . .	1,004	1,918	1,559	...	6,511	20,331	243,125	240	...	262,557
Andaman . . . . .	2,014,000	6,000	45,000	407,000	2,469,000	85,000	36,000	334,000	80,000	585,000
Malaya . . . . .	1,720,000	2,447,000	552,000	16,000	4,734,000	1,615,000	16,081,000	70,000	..	17,600,000
Darbar . . . . .	1,625,000	4,650,000	50,000	300,000	6,525,000	3,033,000	37,374,000	140,000	5,370,000	47,517,000
TOTAL 1927-28 . . . . .	21,166,520	144,556,201	1,805,159	6,105,432	173,765,195	23,920,009	132,378,559	6,405,230	51,033,700	218,161,800
" 1927-28 . . . . .	17,708,221	103,377,817	2,264,140	3,179,417	157,077,591	23,520,561	141,227,096	10,112,250	65,395,660	243,990,177
" 1927-28 . . . . .	18,472,736	102,820,842	1,072,815	3,802,007	125,514,633	19,174,573	167,304,579	10,003,320	40,005,600	225,431,372
" 1925-26 . . . . .	62,159,112	71,100,300	1,414,470	4,212,373	67,316,300	14,623,570	157,490,510	8,062,153	51,754,220	235,327,132
" 1921-22 . . . . .	16,310,700	81,252,000	2,172,231	2,370,238	113,517,637	16,492,147	151,227,762	7,622,103	51,973,450	220,328,128

STATEMENT XIV.—*contd.*Forest produce removed by different agencies—*contd.*

## Part II.—Value of minor forest produce.

Province.	Bamboo.					Grazing and Todder Grass.					Other Minor produce.				
	By Government.	By purchasers.	By free grantees.	By right holders.	Total.	By Government.	By purchasers.	By free grantees.	By right holders.	Total.	By Government.	By purchasers.	By free grantees.	By right holders.	Total.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal . . .	651	1,50,913	846	...	1,52,440	...	30,008	34,078	...	70,714	41,293	2,67,470	2,081	...	3,10,930
United Provinces . . .	3,553	1,63,190	191	2,302	1,64,206	1,824	1,70,910	11,183	2,78,077	1,74,674	3,05,070	4,73,709	23,983	12,107	8,14,688
Punjab . . .	83,192	11	23	560	33,805	78	1,46,091	58,021	20,12,856	22,17,146	4,61,097	22,034	17	41,033	6,32,676
Burma . . .	557	3,77,510	5	10,351	2,88,030	30	18,507	51,200	1,51,633	2,21,060	10,015	3,03,108	9	55,303	4,28,467
Federated States. Shan	...	9,197	...	8,033	12,230	...	3,073	6,400	8,500	19,037	52	8,07,593	...	16,422	6,83,766
Bihar and Orissa . . .	7,701	35,236	1,500	5,110	49,603	...	19,483	1,216	1,12,716	1,96,415	20,119	57,304	210	4,439	82,156
Assam . . .	243	63,634	16,090	...	1,01,760	...	42,395	10,244	110	61,750	8,151	6,33,323	1,80,261	...	8,00,783
Central Provinces . . .	6,850	4,10,333	8,063	4,628	4,28,660	2,638	16,01,910	1,50,870	3,76,333	22,33,787	2,06,150	3,30,078	38,846	14,920	6,00,012
Goorg . . .	45	2,162	...	...	2,207	...	1,070	1,337	84	2,527	...	31,204	1	...	31,295
North-West Frontier Province.	...	...	...	...	...	...	6,140	00	5,687	18,603	90,784	530	...	100	1,00,423
Ajmer . . .	...	710	...	...	710	1,066	10,716	1,351	23,537	46,730	414	3,012	...	...	3,428
Baluchistan . . .	...	...	...	...	...	...	1,223	1	41,470	43,604	83	1,033	20	...	1,001
Andamans . . .	438	41	1,894	197	3,010	...	...	...	...	...	641	1,890	4,600	310	7,610
Madras . . .	10,250	3,67,141	8,313	520	4,01,242	333	6,57,439	18,753	7,137	8,78,712	11,026	6,66,055	7,140	660	9,00,027
Bombay . . .	1,718	1,71,317	985	40,613	2,23,033	...	7,61,507	16,500	6,03,870	11,91,240	15,248	2,14,530	6,170	42,303	2,78,655
TOTAL 1928-29	65,536	17,10,291	34,195	81,712	18,91,064	6,890	30,07,577	3,77,003	37,13,754	77,01,204	11,88,010	30,43,251	3,63,643	2,81,540	75,82,056
" 1927-28	55,100	10,04,114	40,804	80,751	18,80,003	6,067	33,46,521	3,60,270	33,65,641	70,02,331	18,80,140	30,10,083	2,61,018	1,90,045	51,04,164
" 1926-27	70,107	10,05,890	38,211	87,000	18,88,397	27,036	35,58,027	43,07,110	33,89,600	71,01,771	11,69,171	38,05,027	3,60,533	1,93,401	55,07,735
" 1925-26	62,620	10,13,763	29,327	95,814	18,50,698	10,517	30,86,287	5,74,353	32,82,003	73,53,120	10,00,845	30,07,080	2,37,013	2,00,030	51,00,983
" 1924-25	1,00,720	15,07,320	33,479	65,220	10,09,085	14,145	30,63,835	3,87,300	32,00,637	70,14,620	10,65,007	33,45,621	2,83,371	2,01,145	47,07,814

## STATEMENT XV.

## Exports of forest produce.

Articles of forest produce.	Quantity in tons of 20 cwt. (in the case of teak and other timbers, on bio tons).		Valuation at port of shipment in 1928-29.	
	Average of 5 years 1923-24 to 1927-28.	In 1928-29.	Total.	Per ton.
	1	2	3	4
Caoutchouc, raw . . . . .	9,809	11,529	1,99,85,435	1,733
Button . . . . .	988	1,236	34,40,608	2,734
Lac . . . . .	19,702	26,537	6,81,61,168	2,569
Shell . . . . .	5,192	9,397	1,48,24,118	1,578
Stick, seed and other kinds . . . . .	2,464	2,353	9,28,048	394
Catch and gambier . . . . .	70,118	61,534	80,44,314	132
Myrobolans . . . . .	324	382	20,50,619	5,883
Cardamums . . . . .	880	960	17,28,121	1,800
Sandal . . . . .	51,249	52,591	1,46,70,056	279
Teak . . . . .	—	—	10,91,059†	—
Other kinds of wood and timber* . . . . .	—	—	—	—
TOTAL 1928-29 . . . . .	...	...	19,49,23,946	...
1927-28 . . . . .	...	...	12,73,46,767	...
" 1926-27 . . . . .	...	...	10,63,30,003	...
" 1925-26 . . . . .	...	...	12,84,97,718	...
" 1924-25 . . . . .	...	...	11,43,32,316	...

\* Quantity not recorded.  
† Includes teak keys.

## STATEMENT XV (a).

Year (calendar).	Imports of timber into British India, 1925-1929.		Imports of sleepers of wood for railways into British India, 1925-1929.	
	Cubic tons.	Rs.	Tons.	Rs.
1925 . . . . .	‡31,156	28,70,856	14,238	14,91,246
1926 . . . . .	‡28,104	‡27,49,637	25,734	31,17,949
1927 . . . . .	‡26,002	‡33,44,387	14,704	16,60,677
1928 . . . . .	‡23,860	‡28,90,525	1,960	2,27,845
1929 . . . . .	‡26,544	‡31,83,032	8	1,232

‡ Represent figures for deal and pine wood, jarrah wood and teak wood only from April 1925.

## STATEMENT XVI.

Estimated value of forest produce given away free or at reduced rates.

Provinces. 1	Timber. 2	Fuel. 3	Bamboos. 4	Gross and grazing. 5	Other minor produce. 6	Total. 7
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	3,288	64,785	40,280	40,635	2,061	1,51,054
United Provinces	1,24,000	1,24,000	8,000	...	54,000	8,10,000
Punjab	70,105	7,53,986	...	...	21,15,935	29,40,026
Burma	47,462	777	10	51,200	4	99,453
Federated Shan States	2,041	...	...	6,499	...	8,540
Bihar and Orissa	12,737	872	1,505	2,924	1,611	19,550
Assam	87,978	51,806	18,989	19,963	1,60,264	13,07,000
Central Provinces	28,496	55,702	12,288	18,48,236	38,682	14,83,554
Coorg	...	...	...	4,678	...	4,678
North-West Frontier Province	2,235	87,710	...	5,683	...	45,878
Ajmer	12	...	...	24,988	...	25,000
Baluchistan	500	5	...	30	...	535
Andamans	54,697	3,886	1,520	...	4,909	65,011
Madras	85,965	8,172	3,088	17,256	7,585	1,22,068
Bombay	90,241	1,70,342	50,702	7,09,240	46,726	10,75,260
TOTAL, 1925-29	5,85,802	12,71,552	1,86,383	22,80,938	21,53,527	68,58,502
" 1927-28	6,02,636	15,10,201	1,45,106	22,07,418	24,83,483	69,58,064
" 1926-27	5,91,572	14,36,747	1,42,861	21,52,169	24,84,581	67,57,680
" 1925-26	5,47,210	13,20,108	1,47,125	24,93,462	24,22,153	69,30,058
" 1924-25	4,68,901	13,18,840	95,891	44,72,409	3,79,190	67,31,240

## STATEMENT XVII.

Details of revenue and expenditure for the forest year 1928-29.  
(Excluding Burma and Federated Shan States.)

		Rs.	Percentage of each item to total.
Gross Receipts	(a) Wood . . . . .	2,88,51,343	72.7
	(b) Minor forest produce . . . . .	38,09,264	9.6
	(c) Forest stamps and Commutation fees for forest produce . . . . .	98,811	0.2
	(d) Grazing . . . . .	35,49,005	8.8
	(e) Revenue from forests not managed by Government . . . . .	1,90,672	0.5
	(f) Miscellaneous . . . . .	32,00,505	8.03
		Total Revenue . . . . .	3,97,02,000
A. Recurring	(a) Administration . . . . .	1,37,92,150	51.8
	(i) Superior Staff . . . . .		
	(ii) Subordinate Staff (including Rangers, Foresters and Guards). . . . .		
	(iii) Office Establishments (including Contingencies). . . . .		
	(b) Working . . . . .		
	(1) Extraction . . . . .	70,41,246	26.5
	(2) Roads and Buildings . . . . .	13,84,444	5.2
	(3) Fire protection . . . . .	2,73,812	1.0
	(4) Cultural operations . . . . .	7,53,800	2.9
	(5) Live-stock, stores and plant . . . . .	5,31,929	2.2
(6) Working-Plans . . . . .	29,633	0.1	
(7) Rent for leased forests . . . . .	3,41,760	1.3	
(8) Miscellaneous . . . . .	4,77,099	1.6	
(c) Expenditure on realization of revenue from forests not managed by Government . . . . .	23,330	0.0	
(d) Forest Science and Education (including all "A" and "B" charges of Imperial Forest College and Research Institute). . . . .	25,211	0.0	
	Total . . . . .	2,47,41,578	—
B. Extraordinary	(e) Forest Settlement . . . . .	18,567	0.0
	(f) Forest Survey . . . . .	20,961	0.0
	(g) Forest Demarcation . . . . .	1,03,311	0.4
	(h) Gain or loss by Exchange on English transactions, interest on capital outlay, etc. . . . .	3,26,140	1.2
	(i) Share of Capital charges transferred to S.A . . . . .	11,25,641	5.3
	Total . . . . .	18,91,620	—
	GRAND TOTAL OF EXPENDITURE . . . . .	2,66,36,108	—
	Net Revenue . . . . .	1,30,72,502	—
	(Excluding Burma and Federated Shan States)		

\* Expenditure under this head in provinces has been included in (a) Administration.

## STATEMENT XVII(a).

Details of revenue and expenditure for the forest year 1928-29.

(Burma and Federated Shan States only.)

		Rs.	Percentage of each item to total.	
Gross Receipts	(a) Wood . . . . .	1,44,00,435	79.5	
	(b) Minor forest produce . . . . .	10,70,635	5.9	
	(c) Grazing . . . . .	22,579	0.1	
	(d) Revenue from forests not managed by Government . . . . .	2,41,539	1.3	
	(e) Miscellaneous . . . . .	23,64,885	13.0	
		Total Revenue . . . . .	1,81,00,143	...
A Recurring	(a) Administration . . . . .	47,91,787	56.8	
	(i) Superior Staff . . . . .			
	(ii) Subordinate Staff (including Rangers, Foresters and Guards). . . . .			
	(iii) Office Establishments (including Contingencies). . . . .			
	(b) Working . . . . .			
	(1) Extraction . . . . .	4,40,440	5.2	
	(2) Roads and Buildings . . . . .	8,33,376	8.9	
	(3) Fire protection . . . . .	32,228	0.3	
	(4) Live-stock, stores and plant . . . . .	2,86,901	2.8	
	(5) Working Plans, revision and maintenance. . . . .	23,990	0.2	
	(6) Maintenance of boundaries . . . . .	86,545	0.4	
(7) Regeneration and improvement . . . . .	1,81,020	2.1		
(8) Silvicultural Research . . . . .	11,451	0.1		
(9) Utilisation Research . . . . .	...	...		
(10) Other Works . . . . .	1,03,647	1.2		
(11) Miscellaneous . . . . .	1,14,400	1.3		
	Total . . . . .	63,05,785	...	
Expenditure				
	B Extraordinary	(c) Forest Survey . . . . .	...	...
		(d) Gain or loss by Exchange on English transactions, interest on capital outlay, etc. . . . .	6,44,000	7.6
(e) Share of capital charges transferred to S-A . . . . .		14,74,977	17.5	
	Total . . . . .	21,18,986	...	
	GRAND TOTAL OF EXPENDITURE . . . . .	84,24,771	...	
	Net Revenue . . . . .	96,75,372	...	
	(Burma and Federated Shan States only.)			

## Summary of revenue and expenditure of the

Budget Heads.	Imperial.	Bengal.	United Provinces.	Punjab.	Burma (includes Federated Shan States and backward tracts).	Bihar and Orissa (includes Angul Division).	Assam.
1	2	3	4	5	6	7	8
<b>REVENUE.</b>							
I.—Timber and other produce removed from the forests by Government agency.	...	5,96,574	9,77,151	25,11,037	3,50,472	89,700	8,41,485
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	23,66,077	51,38,200	4,57,407	1,48,00,935	10,38,467	25,09,335
III.—Drift and waif wood and confiscated forest produce.	...	19,889	3,117	85,576	3,42,263	658	21,172
IV.—Revenue from forests not managed by Government.	...	...	31,000	3,030	2,41,580	...	85,012
V.—Miscellaneous	...	1,33,417	27,615	4,70,975	23,64,885	16,386	3,07,869
<b>TOTAL REVENUE</b>	...	81,16,837	61,80,301	35,28,025	1,81,00,143	10,07,161	37,67,873
<b>EXPENDITURE.</b>							
A.—CONSERVANCY AND WORKS.							
I.—Timber and other produce removed from the forests by Government Agency.	...	2,16,430	3,37,377	9,93,338	1,73,322	13,506	7,10,353
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	2,37,833	2,32,579	1,739	1,06,833	29,960	35,917
III.—Drift and waif wood and confiscated forest produce.	...	3,205	505	27,716	70,760	...	994
IV.—Revenue from forests not managed by Government.	...	...	21,016	...	...	20,720	1,18,629
V.—Rent of leased forests and payments to shareholders in forests managed by Government.	...	...	6,333	1,05,397	...	2,381	25,920
VI.—Live-stock, stores, tools and plant	...	24,906	62,078	14,890	2,86,001	70,470	2,14,879
VII.—Communications and buildings	...	1,18,912	3,38,507	67,970	3,83,376	42,912	28,815
VIII.—Demarcation, improvements and extension of forests.	...	1,11,016	3,55,312	94,901	3,88,881	15,001	15,035
IX.—Miscellaneous	916	16,703	17,458	3,153	1,14,100	2,00,963	11,51,462
Total A—Conservancy and Works	916	7,03,152	14,02,925	18,08,603	15,13,998		
B.—ESTABLISHMENTS.							
Total B.—Establishments (includes salaries, travelling and other allowances and contingencies).	58,445	8,15,605	16,72,337	11,19,264	47,91,767	4,94,815	7,79,811
C.—Total gain or loss by exchange on English transactions, interest on capital outlay, etc.	...	183	67,991	65,443	6,44,009	23,183	21,393
D.—Total share of Capital charges transferred to S-A (i.e., Capital charges met from Revenue).	...	1,04,251	1,01,143	9	13,75,977	1,31,406	1,69,700
E.—Total Capital Outlay under 52-A (i.e., not transferred to S-A).	...	...	...	1,08,650	...	...	7,386
<b>Grand Total of EXPENDITURE</b> (Excluding expenditure under E.)	59,361	16,82,191	32,49,716	24,93,319	84,24,771	8,50,373	21,22,376
<b>SURPLUS</b> (Excluding expenditure under E.)	...	14,86,166	29,36,675	10,34,706	96,75,572	2,46,786	16,45,507
<b>District</b>	59,361	...	...	...	...	...	...
Proportion of surplus to gross revenue	...	46	47	29	53	22	51
Net revenue per square mile of forest area under control of Forest Department.	...	136	565	103	60	50	51

## MENT XVIII.

Forest Department in India for the financial year 1928-29.

Central Provinces.	Coorg.	North-West Frontier Province.	Ajmer.	Baluchistan.	Andamans.	Forest College and Research Institute.	Madras.	Bombay.	Total.
9	10	11	12	13	14	15	16	17	18
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
16,45,717	4,27,841	7,81,037	87,410	6,001	14,88,436	...	17,97,674	26,76,650	1,41,81,085
34,11,058	72,955	17,969	41,532	10,897	2,707	...	32,73,879	42,10,633	8,73,60,535
1,390	...	2,562	...	...	...	...	10,949	2,897	4,93,472
84,687	...	8,241	...	4,712	...	...	...	25,961	4,32,261
8,53,469	25,340	24,568	8,632	2,315	8,478	1,06,001	10,72,771	4,15,874	53,41,790
54,46,816	5,25,636	8,29,877	87,924	23,425	15,00,700	1,06,001	61,54,773	78,43,085	5,78,00,148
5,43,662	49,007	5,88,864	21,673	3,015	8,11,506	...	5,14,015	12,84,429	61,89,035
2,21,830	...	...	605	...	660	...	1,76,706	54,201	11,68,088
79	...	669	...	...	...	...	351	231	1,04,568
...	...	...	...	284	...	...	...	992	25,830
12,524	...	24,130	...	...	...	...	524	46,514	8,41,780
29,034	19,520	...	345	100	2,18,130	16,632	1,21,186	27,817	8,28,680
1,86,882	14,126	33,644	18,866	934	14,425	5,444	1,52,587	1,64,279	17,17,820
2,06,773	90,873	6,851	2,529	1,478	38,650	...	98,489	1,24,099	15,94,109
55,859	4,211	(a) — 508	500	645	11,777	1,89,680	14,970	1,81,488	5,91,489
18,15,643	1,16,787	6,02,650	30,718	6,456	10,95,148	2,11,956	10,78,859	17,78,553	1,25,81,044
23,33,616	1,35,857	1,52,189	81,845	80,422	1,65,653	6,87,084	28,97,620	24,48,338	1,86,09,153
...	46	...	...	...	...	...	1,05,544	42,657	9,70,449
...	12,993	60,140	4,792	...	68,120	42,607	4,77,481	2,32,807	29,00,618
2,95,661	...	...	...	...	...	...	...	...	(c) 7,71,856
36,49,859	2,65,133	8,34,035	76,355	36,873	13,28,927	9,41,787	45,59,509	44,92,445	8,50,61,269
17,97,057	2,60,503	...	11,569	...	1,71,779	...	15,95,270	28,50,590	2,86,61,932
...	...	5,558	...	13,458	...	8,35,736	...	...	9,14,108
63	40	...	13	...	11	...	26	38	41
91	502	...	82	...	78	...	62	191	95

(a) Work advances after deducting expenditure under IX miscellaneous.

(b) Includes Rs. 1,84,616 on account of expenditure in England by the High Commission.

(c) Not included in Grand Total of expenditure.

STATE

Revenue of the Forest Department throughout India for the 30 financial years

(I) REVE

Province.	Average of 1869-70 to 1873-74.	Average of 1874-75 to 1878-79.	Average of 1879-80 to 1883-84.	Average of 1884-85 to 1888-89.	Average of 1889-90 to 1893-94.	Average of 1894-95 to 1898-99.	1899-1900.	1900-01.	1901-02.	1902-03.	1903-04.	1904-05.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial . . .	2,176	31,717	25,429	10,866	5,147	9,688	6,090	2,460	3,481	3,650	7,455	3,768
Bengal* . . .	1,61,363	2,59,772	1,06,578	6,31,384	7,66,431	10,49,364	11,33,910	12,33,330	12,92,237	12,56,247	10,65,523	11,67,472
United Provinces . . .	13,69,073	12,21,650	11,34,615	14,63,525	16,80,190	15,31,521	16,14,740	15,65,468	17,15,508	20,25,321	20,60,416	23,47,818
Punjab . . .	6,87,423	7,05,538	7,37,338	9,11,950	9,00,417	11,30,510	14,00,770	18,50,842	14,47,558	15,80,408	17,17,797	18,71,443
Burma . . .	8,91,293	14,20,175	19,68,356	25,01,918	49,78,654	66,15,543	78,12,050	80,54,444	58,73,938	67,30,059	82,68,385	89,59,756
Bihar and Orissa . . .	...	...	...	...	...	...	...	...	...	...	...	...
Assam† . . .	...	1,01,098	1,91,687	2,32,055	3,81,750	4,15,912	5,68,100	5,49,521	5,12,903	5,80,200	6,75,732	6,15,677
Central Provinces and Berar . . .	7,41,879	9,79,936	12,81,992	14,11,163	16,98,505	18,75,958	12,97,490	12,63,614	15,79,116	16,84,428	19,98,032	20,18,453
Coorg . . .	92,491	78,887	1,03,170	1,13,021	1,63,136	1,63,456	1,62,410	1,37,506	1,70,212	1,90,730	2,24,031	1,93,057
North-West Frontier Province . . .	...	...	...	...	...	...	...	...	13,012	1,01,123	1,01,833	90,091
Ajmer . . .	65	1,152	4,475	11,559	15,233	14,102	10,270	10,646	6,665	9,736	13,684	17,297
Baluchistan . . .	...	...	8,556	10,373	17,098	15,330	17,060	16,956	14,712	19,338	18,463	22,553
Andamans . . .	5,467	4,485	31,840	57,633	2,79,028	2,51,438	2,60,600	2,77,886	2,60,903	3,26,035	4,82,831	6,20,796
Imperial Forest College and Research Institute . . .	...	...	...	357	1,636	8,010	3,210	3,697	3,515	3,252	3,033	3,557
Forest Surveys (Imperial) . . .	...	17	190	206	668	900	420	327	473	3,031	481	...
Madras . . .	6,03,243	5,88,389	8,06,020	13,00,451	17,14,828	31,10,988	23,02,290	23,40,170	25,43,430	28,18,819	20,57,727	28,29,916
Bombay . . .	11,77,673	12,28,561	16,93,818	20,11,314	33,54,693	30,46,244	24,15,200	23,61,529	23,10,729	23,29,156	27,51,539	30,20,556
GRAND TOTAL . . .	56,80,061	66,60,397	68,17,913	1,16,68,149	1,59,49,014	1,77,15,756	1,90,00,610	1,97,70,493	1,78,23,715	1,91,54,022	2,22,16,717	3,40,28,950

Province.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.	1922-23.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial . . .	51,720	27,488	41,527	37,122	27,803	26,553
Bengal . . .	18,76,060	10,41,104	20,51,237	21,51,763	18,93,959	23,11,226
United Provinces . . .	61,16,637	66,37,166	71,71,951	87,79,781	86,46,877	83,72,663
Punjab . . .	21,17,776	21,51,178	38,45,878	38,05,058	49,31,178	34,44,443
Burma . . .	1,23,61,496	1,23,23,882	1,63,35,602	1,89,25,060	2,21,16,787	1,69,48,952
Bihar and Orissa . . .	7,53,625	9,44,763	8,17,458	8,10,602	9,00,873	8,81,004
Assam . . .	13,09,953	11,92,718	14,81,800	15,31,944	12,87,027	17,13,553
Central Provinces and Berar . . .	34,66,493	34,88,422	45,46,728	43,91,526	41,38,693	47,06,979
Coorg . . .	4,53,673	6,77,873	9,48,028	4,27,851	7,83,731	9,42,653
North-West Frontier Province . . .	3,37,711	3,61,822	4,03,541	3,10,779	5,74,858	7,27,059
Ajmer . . .	27,733	37,260	34,914	48,112	40,612	43,978
Baluchistan . . .	17,934	25,106	17,937	22,514	17,229	14,939
Andamans . . .	7,93,556	11,84,368	8,00,795	6,24,374	5,50,093	5,88,027
Imperial Forest College and Research Institute . . .	8,801	9,083	8,808	12,648	24,117	1,31,763
Forest Surveys (Imperial) . . .	...	...	...	...	...	...
Madras . . .	54,56,480	47,91,450	62,34,149	53,81,216	48,69,171	52,72,956
Bombay . . .	63,12,022	1,04,91,031	84,94,436	69,98,585	74,93,563	70,97,884
GRAND TOTAL . . .	4,09,69,257	4,66,18,231	5,36,75,739	5,41,48,495	5,83,18,071	5,52,14,073

\* Includes figures up to 1910-11 for districts subsequently transferred to Bihar and Bengal.

† Includes figures up to 1910-11 for Eastern Bengal districts subsequently transferred to Bihar.

(a) Includes Federated Shan States.

## MENT XIX.

from 1899-1900 to 1928-29 and the average of 6 quinquennial periods from 1869-70 to 1898-99.

## NUE.

1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.	Province. <sup>2</sup>
Rs.												
7,255	...	7,666	8,189	10,632	8,662	10,680	12,837	11,471	12,047	23,457	24,546	Imperial.
11,18,542	10,65,669	11,97,050	11,84,845	10,80,640	11,07,444	11,22,442	16,00,601	15,16,111	13,04,496	11,45,610	18,38,779	Bengal.*
24,33,423	25,02,664	24,09,745	21,75,106	23,01,161	23,78,430	30,16,100	35,43,963	37,12,487	31,85,235	37,38,631	50,40,932	United Provinces.
17,81,653	16,05,284	14,57,449	12,68,792	10,32,638	12,17,988	18,10,077	12,39,033	13,54,013	14,36,005	17,27,288	18,87,801	Punjab.
1,03,29,860	98,12,510	80,63,960	91,92,062	82,58,077	1,00,70,117	99,67,594	1,09,22,895	1,14,25,430	97,07,694	96,99,217	1,23,79,531	Burma.
...	...	...	...	...	...	4,07,218	4,38,953	4,91,783	5,49,770	5,17,727	5,29,081	Bihar and Orissa.
11,06,096	12,20,592	14,30,447	14,46,368	15,54,732	18,00,635	11,46,820	11,42,091	10,97,969	8,32,877	10,55,052	11,48,621	Assam.†
24,49,131	24,01,150	22,80,128	20,78,162	20,78,340	21,14,220	25,49,854	31,71,615	31,86,453	32,72,529	32,78,262	33,71,578	Central Provinces and Berar.
2,45,410	2,35,000	2,74,756	2,24,880	2,13,120	2,70,056	2,95,170	2,81,652	3,20,227	1,99,237	4,40,155	4,87,814	Coorg.
1,23,529	1,83,214	2,85,490	1,22,782	1,73,805	2,05,342	1,58,171	2,37,183	2,66,741	2,38,013	1,86,815	2,40,935	North-West Frontier Province.
15,002	16,335	29,864	27,615	23,990	33,540	26,361	36,506	33,597	31,170	23,445	21,272	Ajmer.
21,481	21,195	24,820	23,305	18,720	23,212	20,117	20,159	19,958	19,058	21,638	18,277	Baluchistan.
5,82,511	6,07,027	2,19,622	2,02,018	2,59,477	4,16,779	5,92,160	4,49,925	4,45,811	3,39,248	4,34,784	6,40,711	Andamans.
3,080	4,579	6,137	4,080	4,909	4,080	5,550	7,611	5,806	8,617	6,003	8,190	Imperial College and Research Institute.
...	...	...	...	...	...	...	...	...	...	...	...	Forest Survey (Imperial).
29,87,604	32,90,660	33,93,880	38,90,910	41,78,331	38,80,411	41,68,921	41,12,473	42,00,520	39,41,537	41,06,838	45,96,120	Madras.
88,84,003	84,22,431	86,46,177	35,87,356	37,57,656	37,18,224	33,80,569	49,92,519	51,03,156	46,80,242	47,01,269	55,19,177	Bombay.
2,60,74,593	2,61,91,486	2,53,62,970	2,51,56,790	2,60,25,791	2,74,05,451	2,00,57,359	3,29,09,609	3,33,01,545	2,97,09,784	3,11,16,367	3,78,61,930	Grand Total.

1923-24.	1924-25.	1925-26.	1926-27.	1927-28.	1928-29.	Province.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
20,551	30,100	...	...	...	...	Imperial.
22,61,515	24,75,529	28,56,420	31,28,841	33,49,450	31,18,357	Bengal.
73,56,029	69,21,837	64,26,281	59,71,803	72,01,163	61,80,391	United Provinces.
43,86,583	37,27,812	41,12,076	39,07,791	31,91,217	35,28,025	Punjab.
(a) 1,94,92,890	(a) 1,90,77,524	2,23,46,518	2,35,94,060	2,21,07,668	1,81,00,143	Burma.
10,29,085	10,70,208	10,28,592	9,43,752	9,39,760	10,97,101	Bihar and Orissa.
19,74,202	24,78,756	30,39,140	31,83,473	36,13,460	37,67,873	Assam.
51,04,920	52,82,632	49,87,400	53,21,376	50,78,160	54,46,916	Central Provinces and Berar.
7,00,947	6,68,030	5,38,518	4,58,145	4,99,372	5,25,636	Coorg.
5,33,332	6,63,767	7,44,207	7,91,166	7,56,700	8,29,377	North-West Frontier Province.
.55,422	60,052	72,759	66,934	76,515	87,924	Ajmer.
22,403	20,393	28,621	27,942	20,867	20,425	Baluchistan.
6,11,882	7,25,597	6,91,020	11,70,663	14,18,002	15,00,706	Andamans.
1,67,330	1,02,579	1,05,097	2,74,025	1,16,167	1,06,001	Imperial Forest College and Research Institute.
"	"	"	"	"	"	Forest Survey (Imperial).
54,15,557	55,69,682	51,70,520	56,23,700	58,44,481	61,54,723	Madras.
71,49,004	73,07,004	75,28,038	76,50,420	72,04,094	73,43,035	Bombay.
5,62,90,819	5,67,44,682	5,93,70,825	6,10,61,731	6,18,09,186	5,76,00,143	Grand Total.

Orissa.  
Bengal.

(b) Excludes Rs. 52,151 deducted on account of Refunds.

STATE

## Expenditure of the Forest Department throughout India for the 30 financial years

## (II) EXPEN.

Province.	Average of 1869-70 to 1873-74.	Average of 1874-75 to 1878-79.	Average of 1879-80 to 1883-84.	Average of 1884-85 to 1888-89.	Average of 1889-90 to 1893-94.	Average of 1894-95 to 1898-99.	1899-1900.	1900-01.	1901-02.	1902-03.	1903-04.	1904-05.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	63,685	67,102	80,454	87,185	84,125	82,516	96,550	88,578	79,539	85,017	89,345	83,058
Bengal†	1,11,084	2,12,024	3,55,147	3,94,347	4,04,147	5,38,652	5,45,210	5,70,806	6,57,131	6,88,014	7,03,508	6,88,559
United Provinces	9,63,005	8,39,709	8,38,653	9,17,698	9,46,423	9,35,078	9,42,380	9,63,459	10,08,739	10,12,998	10,61,438	13,01,553
Punjab	8,29,326	5,57,148	5,41,242	6,44,372	6,46,374	7,50,224	12,11,460	8,87,848	9,38,835	9,60,095	11,56,415	10,18,351
Burma	4,02,847	8,12,279	10,12,512	18,22,424	16,72,383	21,20,642	24,47,440	26,54,717	26,46,457	28,00,923	33,52,404	31,46,921
Bihar and Orissa	...	...	...	...	...	...	...	...	...	...	...	...
Assam‡	...	88,293	1,62,460	2,11,655	2,68,159	2,86,870	3,57,140	3,47,972	3,20,112	3,27,498	4,25,484	5,03,050
Central Provinces and Berar.	3,99,072	4,33,734	6,13,539	7,37,605	10,10,657	11,78,660	12,75,820	11,65,860	12,00,901	12,57,288	12,30,960	13,20,615
Coorg	40,684	86,591	62,248	73,907	77,016	82,146	74,220	70,905	82,333	89,437	92,181	83,820
North-West Frontier Province.	...	...	...	...	...	...	...	...	10,510	54,086	60,603	74,958
Ajmer	6,197	16,692	18,197	17,620	14,061	16,722	15,350	16,782	15,927	16,377	16,680	15,641
Baluchistan	...	...	12,591	16,180	39,452	33,508	28,680	29,254	24,480	23,240	21,697	24,672
Andamans	739	481	5,129	41,108	1,76,189	1,85,428	1,40,910	1,40,137	2,04,867	2,61,702	2,66,121	3,42,431
Imperial Forest College and Research Institute.	...	...	...	28,716	45,023	65,120	73,550	71,238	76,290	66,333	59,339	61,124
Forest Surveys (Imperial).	11,911	63,288	40,147	24,477	24,491	31,936	33,980	33,691	33,730	33,985	33,935	23,229
Madras	4,56,834	5,76,976	6,20,600	10,67,521	12,85,113	15,06,756	16,53,530	17,15,481	17,09,554	18,35,553	17,50,930	19,86,098
Bombay	6,48,046	8,70,487	12,51,292	18,41,812	19,09,769	19,61,582	21,28,130	24,08,581	17,19,680	16,76,441	17,75,937	19,03,804
<b>GRAND TOTAL</b>	<b>39,33,430</b>	<b>45,76,804</b>	<b>56,09,579</b>	<b>74,26,956</b>	<b>86,03,352</b>	<b>97,96,140</b>	<b>1,10,24,680</b>	<b>1,11,60,040</b>	<b>1,07,46,388</b>	<b>1,12,40,931</b>	<b>1,21,66,903</b>	<b>1,20,67,856</b>

Province.	1917-18.	1918-19	1919-20.	1920-21.	1921-22.	1922-23.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	90,932	1,10,638	1,32,777	1,68,903	2,57,011	4,83,404
Bengal	7,83,712	8,25,835	9,72,307	18,30,750	12,88,122	12,81,249
United Provinces	32,04,926	45,08,963	61,55,475	70,45,578	74,04,688	61,58,486
Punjab	11,58,048	17,05,804	21,16,120	35,75,719	43,76,076	49,06,871
Burma	51,87,179	56,91,982	65,38,200	73,07,014	90,83,094	99,72,149
Bihar and Orissa	3,90,716	4,30,849	5,06,800	5,89,118	9,94,665	7,17,531
Assam	6,86,627	6,93,961	8,21,717	9,66,601	9,91,511	11,14,634
Central Provinces and Berar	18,72,124	20,15,548	23,76,230	27,38,601	27,15,621	30,84,417
Coorg	1,99,911	4,25,572	5,07,547	4,68,758	6,30,645	5,66,007
North-West Frontier Province	1,53,875	2,07,857	3,01,453	4,54,197	7,49,384	6,12,383
Ajmer	26,504	28,508	47,282	37,417	41,320	89,840
Baluchistan	29,990	28,757	25,314	23,761	53,275	36,163
Andamans	3,97,724	6,12,826	9,71,491	18,27,930	12,87,027	8,05,181
Imperial Forest College and Research Institute	2,89,694	2,98,048	3,18,503	4,57,484	7,82,824	7,89,596
Forest Surveys (Imperial)	56,597	59,110	59,953	90,448	1,07,118	1,19,935
Madras	80,20,949	81,82,520	36,08,848	45,30,480	51,15,356	47,69,463
Bombay	33,53,714	78,72,107	50,18,682	58,05,022	50,23,916	40,14,844
<b>Grand Total</b>	<b>2,11,57,063</b>	<b>2,88,75,505</b>	<b>3,17,63,199</b>	<b>3,64,19,907</b>	<b>4,08,51,878</b>	<b>3,83,12,041</b>

\* Includes pay of Inspector-General of Forests, Assistant Inspector-General of Forests.

† Includes figures up to 1910-11 for districts subsequently transferred to Bihar and

‡ Includes figures up to 1910-11 for Eastern Bengal districts subsequently transferred

(e) Includes Federated Shan States.

MENT XIX—*contd.*

from 1899-1900 to 1928-29 and the average of 6 quinquennial periods from 1869-70 to 1898-99.

## DITURE.

1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.	Province.
Rs.												
83,767	95,473	1,00,204	1,04,183	1,04,332	92,606	91,714	1,04,162	99,296	99,478	1,09,502	1,03,248	Imperial.*
5,93,509	6,33,886	7,18,394	5,83,931	5,91,099	6,43,285	7,08,374	6,60,794	6,40,167	6,70,935	5,93,635	6,10,619	Bengal.†
14,05,182	18,00,051	11,04,018	12,22,496	12,09,808	12,37,936	13,63,673	16,20,264	18,90,014	23,17,740	25,68,907	27,85,915	United Provinces.
12,65,664	11,44,403	11,76,696	8,51,627	6,67,752	7,40,512	7,65,146	7,90,176	9,10,177	8,80,302	9,23,878	9,34,662	Punjab.
39,35,003	36,59,753	35,51,532	37,17,247	36,83,618	36,42,700	41,31,162	41,93,534	42,74,901	46,80,447	48,86,241	49,36,588	Burma
...	...	...	...	...	...	8,00,916	8,75,894	8,55,048	3,81,371	3,61,550	4,47,972	Bihar and Orissa
5,93,910	7,07,860	8,00,373	8,91,349	10,12,541	10,87,340	8,41,013	8,08,911	9,10,240	8,98,339	7,55,214	6,76,033	Assam.‡
13,07,158	13,42,893	15,83,407	17,53,807	15,86,832	15,89,533	18,38,379	19,46,735	19,53,123	19,36,569	17,34,336	17,68,775	Central Provinces and Berar.
95,748	1,02,855	1,04,819	99,595	1,07,822	1,07,870	1,21,171	1,61,541	1,78,514	1,75,693	1,76,633	1,60,492	Coorg.
95,258	92,650	88,400	81,413	77,391	72,492	89,436	1,22,176	1,31,023	1,25,539	1,04,705	1,18,070	North-West Frontier Province.
17,131	16,715	16,188	19,916	19,272	19,018	22,313	20,714	23,595	21,733	25,152	26,634	Ajmer.
25,743	26,323	31,255	36,586	20,549	26,387	28,917	28,527	25,310	26,000	27,935	26,929	Baluchistan.
8,35,985	2,95,180	2,29,267	1,80,941	1,94,159	2,26,063	2,61,732	2,55,141	2,74,676	2,58,056	4,90,832	4,23,052	Andamans.
80,669	1,87,486	1,58,038	1,89,193	1,98,174	2,10,188	2,63,441	2,68,445	2,95,398	3,31,091	2,78,518	3,05,498	Imperial Forest College and Research Institute.
80,044	30,389	27,000	39,128	41,002	41,140	38,793	35,609	37,743	42,353	49,663	47,407	Forest Survey (Imperial).
22,26,602	21,80,660	27,80,857	29,17,261	33,80,635	32,25,801	34,14,882	31,50,482	32,35,817	28,60,685	29,27,918	28,42,678	Madras.
21,26,093	19,90,153	18,55,437	20,43,873	20,63,088	20,70,417	26,61,430	26,91,455	25,80,877	21,67,925	26,42,038	25,64,681	Bombay.¶
1,42,30,521	1,40,62,819	1,45,12,983	1,47,26,034	1,49,20,651	1,52,44,029	1,60,46,566	1,72,07,810	1,75,42,455	1,82,06,450	1,85,02,607	1,87,43,883	GRAND TOTAL.

1923-24.	1924-25.	1925-26.	1926-27.	1927-28.	1928-29.	Province.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1,44,489	1,68,505	1,18,903	1,23,658	61,661	59,961	Imperial.*
12,42,672	14,17,471	12,00,968	17,34,761	17,02,453	16,82,191	Bengal.
43,50,695	36,84,005	30,95,946	33,73,499	30,93,803	32,43,716	United Provinces.
20,16,035	26,14,488	27,01,510	27,03,386	20,54,874	21,93,319	Punjab.
1,03,02,150	(a) 96,26,813	(a) 66,87,943	(c) 89,40,821	(c) 88,37,853	(a) 84,24,771	Burma.
7,50,657	7,90,397	6,65,624	10,83,009	6,63,874	8,50,373	Bihar and Orissa.
11,59,845	13,80,853	15,67,983	14,47,600	14,45,767	21,22,366	Assam.
30,41,108	31,71,863	31,45,720	30,48,601	31,09,468	36,49,259	Central Provinces and Berar.
5,65,598	3,58,751	3,05,395	2,84,770	2,59,186	2,65,188	Coorg.
4,58,567	5,88,713	5,47,821	6,40,710	6,01,414	8,34,935	North-West Frontier Province.
49,454	49,125	55,161	70,728	82,854	76,855	Ajmer.
31,440	30,478	31,358	33,422	34,010	36,878	Baluchistan.
8,36,214	11,58,000	11,85,068	12,20,097	14,50,684	13,28,927	Andamans.
7,75,642	8,26,365	8,14,033	8,90,508	9,35,664	9,41,787	Imperial Forest College and Research Institute.
93,044	...	...	...	...	...	Forest Survey (Imperial).
46,33,826	50,72,459	46,28,280	50,86,844	47,69,894	45,50,503	Madras.
44,01,024	43,82,817	42,07,620	43,59,510	43,11,781	44,92,345	Bombay.
3,58,15,869	3,52,07,883	3,89,53,202	3,50,06,816	3,56,81,654	3,50,61,260	Grand Total.

Office Establishment, and undistributable and party local items and revenues and charges, on Indore and Bangalore.....Excludes Home charges.  
Crises.  
to Bengal.

STATE

## Surplus of the Forest Department throughout India for the 30 financial years

(III) SUR

Province.	Average of 1869-70 to 1873-74.	Average of 1874-75 to 1878-79.	Average of 1879-80 to 1883-84.	Average of 1884-85 to 1888-89.	Average of 1889-90 to 1893-94.	Average of 1894-95 to 1898-99.	1899- 1900.	1900-01.	1901-02.	1902-03.	1903-04.	1904-05.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	-61,510	-35,985	-55,025	-76,269	-76,978	-78,128	-90,460	-81,115	-76,055	-81,858	-81,890	-79,290
Bengal†	53,284	77,748	2,51,431	2,37,037	3,62,284	5,10,712	5,98,700	6,02,538	6,85,106	6,18,233	3,62,015	4,78,833
United Provinces	2,95,974	3,81,941	2,05,957	5,45,627	7,42,767	5,96,746	6,72,360	6,02,024	7,06,769	10,11,826	11,99,008	10,05,735
Punjab	1,41,903	1,45,410	1,96,096	2,67,578	2,54,043	3,89,286	1,89,810	4,68,490	5,09,223	6,26,813	5,01,333	8,62,059
Burma	4,91,451	6,16,896	9,75,844	11,78,891	33,06,271	44,04,900	53,04,610	53,09,727	32,27,481	38,48,730	49,16,131	55,12,832
Bihar and Orissa	...	...	...	...	...	...	...	...	...	...	...	...
Assam‡	...	12,805	29,427	20,400	1,14,691	1,29,012	2,10,960	2,01,549	1,63,851	2,52,701	2,50,248	3,12,021
Central Provinces and Berar.	3,42,807	5,46,202	6,68,453	6,73,353	6,76,648	1,97,298	21,670	99,748	3,78,312	4,27,140	7,17,069	8,92,844
Coorg	52,807	42,296	40,922	39,117	76,120	51,310	69,180	66,681	87,909	1,01,283	1,31,340	1,09,257
North-West Frontier Province.	...	...	...	...	...	...	...	...	...	...	...	...
Ajmer	-6,132	-17,540	-8,722	-5,761	1,172	-2,560	-5,060	-6,136	-9,062	-6,641	2,796	1,656
Baluchistan	...	...	-4,039	5,157	-21,454	-18,128	-11,620	-12,298	-9,768	-3,904	3,394	-2,117
Andamans	4,728	4,004	29,711	16,525	1,02,880	69,010	1,19,660	1,37,749	62,236	44,333	1,61,250	2,78,365
Imperial Forest College and Research Institute.	...	...	...	...	-28,349	-43,837	-62,080	-70,840	-77,541	-72,745	-63,086	-50,301
Forest Surveya (Imperial).	-11,011	-63,271	-40,808	-24,271	-23,823	-31,636	-33,560	-33,664	-33,257	-30,951	-33,504	-28,229
Madras	1,46,409	11,418	1,65,360	2,32,960	4,29,215	6,04,232	6,48,760	6,24,739	8,83,876	7,78,267	9,06,797	8,43,118
Bombay	5,29,627	3,58,074	6,42,526	11,69,502	14,45,104	10,64,662	2,86,770	5,52,943	6,60,040	6,52,715	9,75,602	11,18,954
<b>GRAND TOTAL</b>	<b>16,96,631</b>	<b>20,83,593</b>	<b>32,07,634</b>	<b>42,41,192</b>	<b>73,45,662</b>	<b>79,19,616</b>	<b>79,81,930</b>	<b>86,10,453</b>	<b>70,77,327</b>	<b>82,22,209</b>	<b>1,06,40,754</b>	<b>1,10,62,094</b>

Province.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.	1922-23.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	-38,612	-83,150	-1,08,250	-1,41,871	-2,28,208	-4,06,941
Bengal	6,98,257	11,18,260	10,78,930	8,48,013	6,10,837	10,79,977
United Provinces	29,11,769	20,38,208	18,16,479	17,88,203	12,41,969	22,14,317
Punjab	9,59,723	3,58,371	14,29,753	2,29,300	6,15,102	-11,62,423
Burma	68,74,320	68,36,870	98,97,062	1,10,68,040	1,30,33,693	89,71,803
Bihar and Orissa	8,62,909	5,18,914	8,10,658	9,21,484	-94,293	1,64,373
Assam	6,23,320	8,01,757	6,59,873	5,05,343	3,05,516	5,09,210
Central Provinces and Berar	15,94,369	14,72,874	21,70,493	16,80,925	14,17,872	16,72,562
Coorg	2,58,782	2,53,301	4,40,481	-89,407	1,03,086	3,56,646
North-West Frontier Province	1,83,830	1,78,965	1,61,068	-2,34,418	-1,76,531	1,15,276
Ajmer	1,229	8,772	-12,868	10,695	-508	4,198
Baluchistan	-12,065	-8,679	-7,877	-6,217	-36,046	-21,529
Andamans	8,95,932	5,71,557	-1,70,696	-7,03,556	-7,86,920	-2,17,157
Imperial Forest College and Research Institute	-2,81,800	-2,88,965	-3,10,195	-4,44,836	-7,03,707	-5,54,823
Forest Surveya (Imperial)	-56,597	-50,110	-59,953	-90,448	-1,07,118	-1,19,935
Madras	24,38,110	16,08,940	25,40,801	8,50,760	-3,46,165	4,89,493
Bombay	29,58,308	26,21,894	26,75,756	15,83,503	24,60,617	30,23,010
<b>GRAND TOTAL</b>	<b>1,93,12,194</b>	<b>1,79,42,726</b>	<b>2,19,18,540</b>	<b>1,77,23,588</b>	<b>1,74,64,193</b>	<b>1,59,03,931</b>

\*Includes pay of Inspector-General of Forests, Assistant Inspector-General of Forests.  
 \*\*Includes figures up to 1910-11 for districts subsequently transferred to Bihar and Bengal.  
 †Includes figures up to 1910-11 for Eastern Bengal districts subsequently transferred.  
 (a) Includes Federated Shan States.

## MENT XIX—contd.

from 1899-1900 to 1928-29 and the average of 6 quinquennial periods from 1869-70 to 1898-99.

## PLUS.

1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.	Province.
Rs.												
-76,512	-95,472	-92,598	-95,934	-93,700	-63,944	-84,034	-91,325	-87,825	-87,491	-86,045	-78,702	Imperial.*
5,25,033	4,32,473	4,84,256	6,00,861	4,89,541	5,24,150	4,16,068	19,32,807	9,75,954	6,83,561	5,51,975	7,19,130	Bengal.†
10,23,216	11,96,013	12,15,732	9,52,970	10,01,586	11,40,501	10,52,487	19,14,690	18,16,473	8,17,405	11,72,524	22,05,017	United Provinces.
5,17,939	4,60,881	2,80,753	4,37,165	3,64,881	4,77,440	5,44,931	4,38,557	4,35,766	5,48,703	6,03,495	7,53,139	Punjab.
63,91,606	61,52,766	51,12,457	51,71,785	56,74,450	62,27,818	58,86,432	67,63,809	71,50,528	50,27,247	48,12,976	74,42,943	Burma.
...	...	...	...	...	...	1,06,297	63,064	1,38,087	1,65,408	1,56,177	81,109	Bihar and Orissa.
5,12,186	6,18,732	6,30,071	5,55,010	5,22,101	8,13,205	8,05,807	3,33,180	1,87,729	-65,462	2,89,888	4,72,588	Assam.‡
11,41,978	10,58,261	7,06,721	3,24,855	4,91,488	5,24,694	7,11,475	12,25,080	12,33,321	13,35,060	15,43,926	16,02,803	Central Provinces and Berar.
1,49,671	1,33,054	1,69,937	1,24,785	1,05,907	1,68,876	1,73,996	1,20,108	1,50,713	23,404	2,72,532	3,26,822	Coorg.
33,271	89,561	1,50,090	41,309	95,914	1,32,850	68,735	1,15,010	1,35,718	1,12,420	82,020	1,22,915	North-West Frontier Province.
-2,129	1,620	11,676	7,6991	4,718	13,928	4,018	6,882	10,302	9,497	-1,707	-5,362	Ajmer.
-4,262	-5,127	-6,429	-18,281	-7,820	-3,175	-8,830	-8,368	-5,322	-6,012	-6,362	-6,652	Baluchistan.
2,46,526	3,11,891	62,555	21,077	65,818	1,89,810	2,50,428	1,01,784	1,71,135	81,192	3,032	2,21,059	Andamans.
-77,583	-1,32,907	-1,51,901	-1,78,511	-1,01,205	-2,15,103	-2,57,801	-2,60,834	-2,09,582	-3,23,474	-2,71,523	-2,97,299	Imperial Forest College and Research Institute.
-30,044	-80,839	-27,060	-39,128	-41,062	-41,140	-38,705	-35,809	-37,743	-42,653	-48,663	-47,407	Forest Surveys (Imperial).
7,01,002	8,10,009	11,12,973	9,78,658	8,38,746	6,54,610	7,54,039	9,81,991	12,64,503	10,50,852	11,70,820	17,53,448	Madras.
18,68,900	14,32,298	16,90,730	15,43,483	16,04,568	16,47,807	16,66,183	23,00,061	25,19,270	21,92,317	20,59,825	29,54,496	Bombay.
1,24,16,072	1,25,27,687	1,18,50,040	1,07,80,765	1,11,05,110	1,21,61,491	1,21,10,793	1,50,01,999	1,57,58,090	1,15,09,334	1,25,23,760	1,83,18,047	GRAND TOTAL.

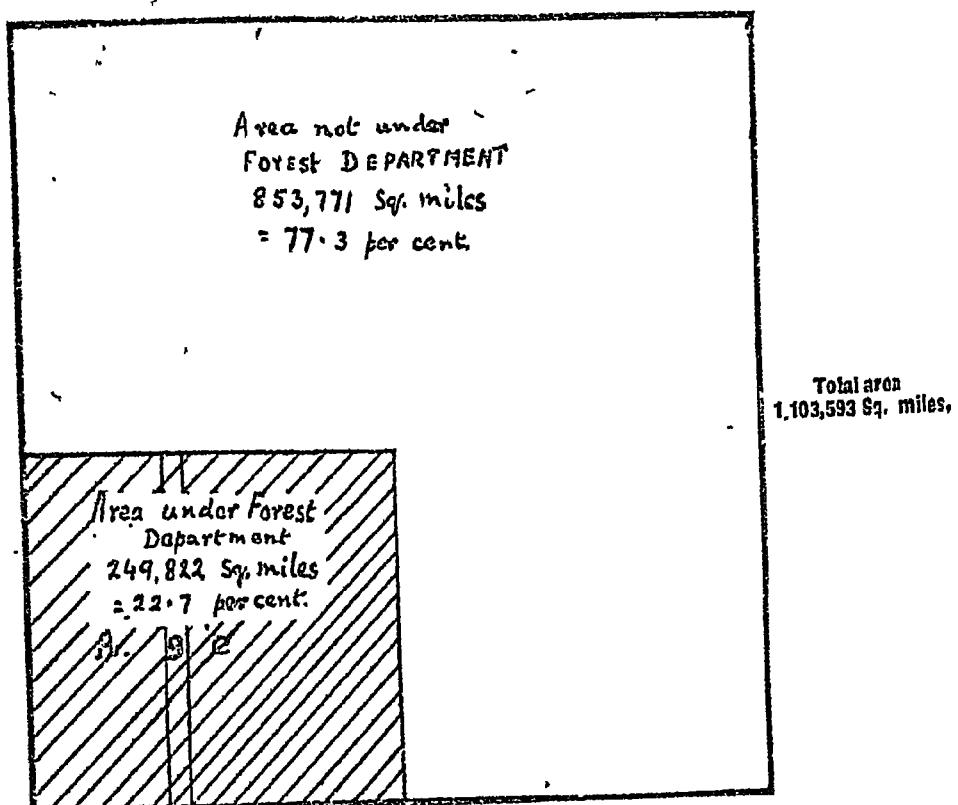
1923-24.	1924-25.	1925-26.	1926-27.	1927-28.	1928-29.	Province.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
-1,14,938	-1,38,493	-1,18,903	-1,23,859	-61,661	-50,861	Imperial.*
10,18,848	10,35,055	15,93,452	18,59,080	10,47,027	14,36,166	Bengal.
80,05,334	32,37,952	27,30,035	21,97,801	92,07,860	29,38,875	United Provinces.
14,70,406	11,12,824	14,10,566	12,04,345	2,36,343	10,81,700	Punjab.
(a)	(a)	(a)	(a)	(a)	(a)	Burma.
91,00,240	1,00,49,511	1,36,53,575	1,40,53,170	1,35,68,810	96,75,372	
2,78,428	2,79,871	3,63,968	-1,39,817	2,75,386	2,46,788	Bihar and Orissa.
8,14,447	11,47,903	14,71,157	16,85,967	21,67,693	16,45,507	Assam.
20,69,821	20,60,769	16,41,680	10,72,685	15,76,692	17,97,057	Central Provinces and Berar.
1,35,319	8,09,270	2,83,128	1,78,375	2,48,186	2,60,503	Coorg.
74,765	81,054	1,96,686	1,50,447	65,386	-5,558	North-West Frontier Province.
5,968	16,937	17,593	-12,704	-6,399	21,369	Ajmer.
-9,037	-9,885	-7,737	-4,480	-4,152	-18,453	Baluchistan.
-2,84,682	-4,28,093	-2,44,034	-40,334	-32,623	1,71,779	Andamans.
-6,08,303	-7,23,766	-7,08,896	-6,22,511	-8,10,197	-8,35,786	Imperial Forest College and Research Institute.
-95,014	...	...	...	...	...	Forest Surveys (Imperial).
7,61,781	4,97,223	3,47,281	5,86,856	5,74,837	15,05,270	Madras.
27,48,580	29,25,647	33,20,412	32,06,904	29,82,818	28,50,590	Bombay.
2,04,74,050	2,14,76,798	2,59,07,023	2,63,58,416	2,56,21,482	2,27,47,874	GRAND TOTAL.

Office Establishment, and undistributable and petty local items and revenues and charges on Indore and Bangalore..... Excludes Home charges.  
Orissa.  
Bengal.



STATISTICAL DIAGRAMS RELATING TO FOREST ADMINISTRATION IN BRITISH INDIA.

1. Area under the control of the Forest Department compared with total area of British India  
(including the Shan States).



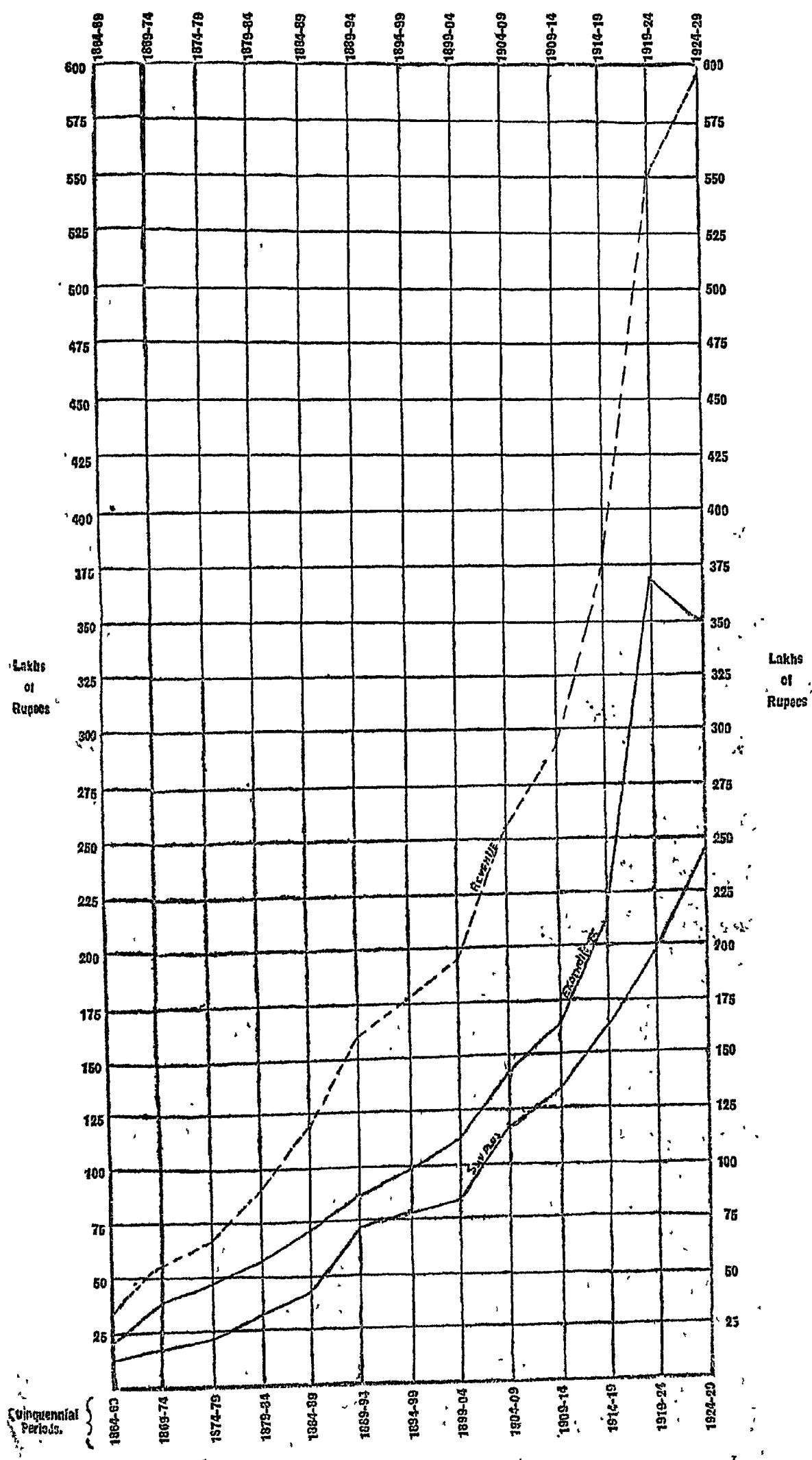
A. Reserved Forests. 106,840 Sq. miles.

B. Protected do. 6,308 do.

C. Unclassed do. 136,665 do.



II.—GROWTH OF FOREST REVENUE AND EXPENDITURE BY QUINQUENNIAL PERIODS SINCE 1864-69.





**DIAGRAM SHOWING**  
**ANNUAL FOREST REVENUE, EXPENDITURE & SURPLUS.**  
 For the 10 years 1919-20 to 1928-29.

